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THE IBIS,

A

QUARTERLY JOURNAL OF ORNITHOLOGY.

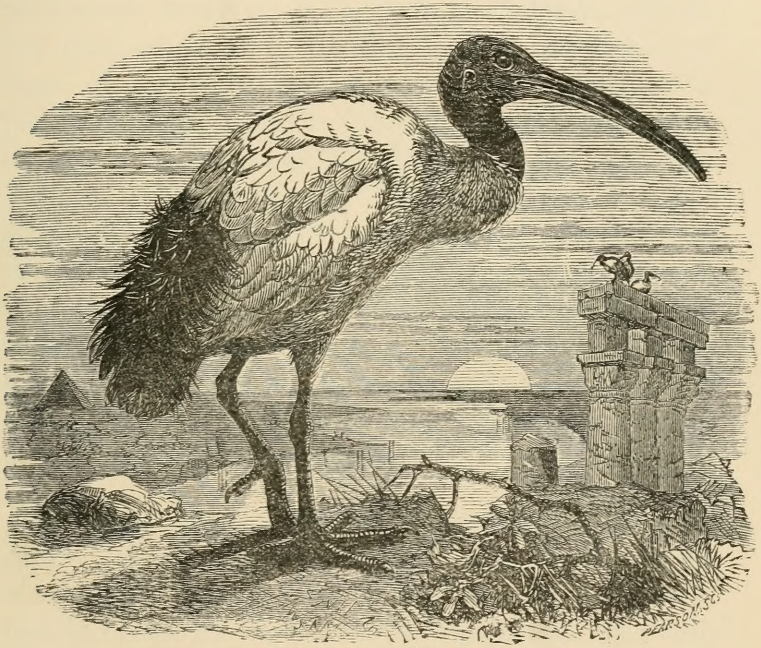
EDITED BY

PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S.,

SECRETARY TO THE ZOOLOGICAL SOCIETY OF LONDON,

AND

HOWARD SAUNDERS, F.L.S., F.Z.S.



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Ibis avis robusta et multos vivit in annos.

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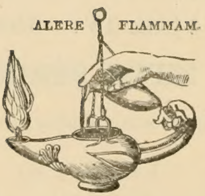
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PREFACE.

It will be observed that the bulk of this year's 'Ibis' somewhat exceeds the usual dimensions of the annual volume. This is mainly owing to the translation of Sundevall's Essay on "The Wings of Birds," which has been prepared in conformity with the wishes of some of our most valued supporters. Sundevall's paper, although issued so long ago as 1843, and twice translated into German (Isis, 1846, pp. 324–366, and Journ. f. Orn. 1855, pp. 118–168), seems to have attracted so little attention in this country that, on the subject being recently taken up again, there appeared to be some probability that the whole work would be commenced *de novo*. Under these circumstances it was thought desirable that this excellent memoir should be recalled to public notice by the issue of an English translation.

In connexion with this subject we are desirous of calling special attention to the series of specimens illustrative of every part of the structure of Birds now in course of preparation for the British Museum of Natural History, which deserves the minute study of every Ornithologist.

P. L. S.
H. S.

London, October 1st, 1886.

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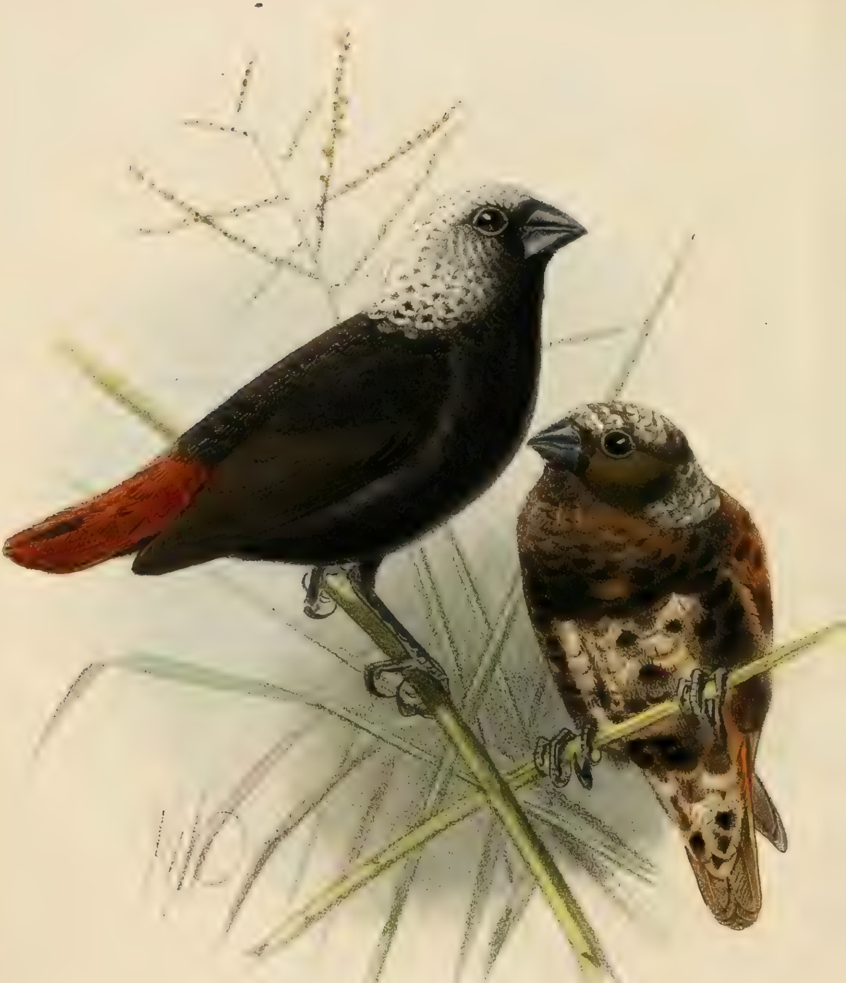
Ibis. 1886. Pl. I



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DONACICOLA HUNSTEINI, ad. et jr.

THE IBIS.

FIFTH SERIES.

No. XIII. JANUARY 1886.

I.—*On two new Species of Birds from New Ireland.*

By O. Finsch, Ph.D., H.M.B.O.U.

(Plate I.)

1. **Donacicola hunsteini**, sp. nov. (Plate I.)

Male. Black, quills lighter, more of a brownish black; vertex and nape ashy grey, the latter lighter; all these greyish feathers with dark brown centres; lores and cheeks black, with faint greyish apical edges, giving these parts a somewhat mottled appearance; upper tail-coverts dark chestnut, as are the external margins of the central tail-feathers; under wing-coverts pale rufous; bill and feet black; iris dark. Total length 3·3 inches, wing 1·9, tail 1·0.

Female like the male, but the upper tail-coverts brighter, more of a cinnamon-brown.

The young bird (Plate I. fig. 2) is dark brown, mixed with black and pale fulvous on breast and vent; on the nape are a few grey-tipped feathers; upper tail-coverts and tail uniform brown.

Fully adult specimens show very narrow greyish edgings to the feathers of the throat, which sometimes form a kind of interrupted semi-collar.

Hab. I discovered this handsome species at the extreme north corner of New Ireland. It lives in the high jungle-grass, and is difficult to obtain.

I have the pleasure of naming this bird after Mr. Karl Hunstein, the zealous and able collector in south-east New Guinea, to whom science is indebted for the discovery of many new species.

2. CARPOPHAGA SUBFLAVESCENS, sp. nov.

Male and Female. Delicate yellowish white, the head and underparts more distinctly yellowish; primaries and secondaries uniform black; under tail-coverts broadly tipped with black; apical half of tail-feathers black, this colour diminishing in extent towards the external feathers, the outermost pair having only one inch width of black at the tips; shafts of the tail-feathers bright yellow; iris dark brown; bill greenish, with the tip yellow; feet plumbeous. Total length 14·0 inches, wing 9·0, tail 4·10.

Hab. Extreme north corner of New Ireland; not plentiful.

This species may be distinguished at once from the Torres Straits Pigeon (*Carpophaga spilorrhoa*) by its distinct yellowish colour, besides which the outermost tail-feather in the latter is white nearly to the end, and the black spot on the under tail-coverts is margined with white at the extreme end.

II.—*On a new African Pigeon of the Genus* Tympanistria.

By Dr. G. HARTLAUB.

TYMPANISTRIA VIRGO, sp. nov.

Mas. Supra ex olivascente fusca, fascia tergi *unica*, maculis irregularibus obscurioribus vix conspicua; stria a rictu per oculum ducta fusca; sincipite, superciliis *valde angustatis* corporeque subtus pure albis; subcaudalibus obscure fuscis; subalaribus læte ferrugineis; remigibus primariis nigro-fuscis, horum pogoniis internis, parte apicali excepta, cinnamomeis, septimo, octavo, nono et decimo in pogonio externo et interno rufis, ultimis dorso proximis et scapularibus necnon tectricibus totis dorso concoloribus; *maculis metallicis alæ omnino nullis*; rectricibus fuscis, binis lateralibus griseis, fascia lata anteapicali nigra; rostro rubello-fuscescente; pedibus coccineis; iride aurantiaco-rubente. Long. tot. circa 25 cent., rostr. 14 mill., al. 122 mill., caud. 85 mill., tars. 20 mill.

In the collection received in 1883 from Dr. Emin Bey (I prefer retaining this pseudonym for the present), the last which has reached me, and of which I am preparing a detailed account, there is a single specimen of a *Tympanistria*, which, at first sight, struck me from the total want of the fine metallic wing-spots so very conspicuous in *T. bicolor*. The specimen being a fully adult male, this was a most interesting differential character. I have been able to examine a large number of specimens of *T. bicolor*, a species not rare in collections, besides which I have gone through all the descriptions of this bird published by ornithologists (Heuglin, Barboza du Bocage, Sharpe, Shelley, &c.). Nowhere do I find a specimen mentioned in which these metallic wing-spots (of a more or less bluish or greenish shade) have been wanting. Therefore I feel justified in proclaiming this species from Eastern Equatorial Africa as a new one.

The other differences from the common *T. bicolor*, which is not different from *T. fraseri*, Bp., are less important. In most of the specimens of *T. bicolor* the inferior part of the back shows two irregular bands of a darker colour. But this is not quite constant, and the two bands vary much in distinctness. Thus, for instance, in a specimen from Gaboon in the Bremen collection I can discover only one band. The ground-colour of the inferior part of the back is, in many specimens, rather greyish, in others it is not to be distinguished from the colour of the upper part of the back. In my new species the ground-colour of the whole upper parts, rump and upper tail-coverts included, is a uniform olive-brown, with a very faint bronze gloss. Then there are some irregular dark spots, forming a sort of transverse band.

The white superciliary stripe, which in *Tympanistria bi-*

color is broad and most conspicuous, is very narrow and much less distinct in *T. virgo.*

As to measurements, the new species appears to me to be altogether a somewhat larger bird. Thus the length of the wing is 122 millim. in *T. virgo,* and 119 millim. in *T. bicolor*; the length of the tail is 85 millim. in *T. virgo,* but only 75 millim. in our specimen of *T. bicolor.*

The locality in Eastern Equatorial Africa where the unique specimen (at present in my collection) was shot by Dr. Emin Bey he names "Djanda." It is the most northern point where the genus *Tympanistria* has been found in the eastern territories of the African continent.

As to *T. bicolor* (=*fraseri,* Bp.), the reader will find all the necessary information in the elaborate and most interesting paper on the Columbidæ of the Ethiopian Region by Capt. Shelley (Ibis, 1883, p. 326).

III.—*On the Nest and Eggs of Swainson's Warbler* (Helonæa swainsoni). By William Brewster*.

It is already a matter of record † that during the year 1884 Mr. Arthur T. Wayne and I found Swainson's Warbler in some numbers near Charleston, South Carolina, where upwards of fifty specimens were taken, including the previously undescribed young in first plumage. But although we ascertained beyond all doubt that the birds bred there, we utterly failed to find the nest, or even to learn anything definite regarding its probable character and position.

In May of the present year I visited Charleston for the third time, and with Mr. Wayne spent several days wading about in the swamps in the hope of stumbling on the prize. But the birds (perhaps thinned by our merciless collecting of the preceding season) proved so very scarce that we often spent an entire day in their haunts without either seeing or hearing one, and the search for a nest seemed so hopeless that I soon abandoned it for a more promising undertaking elsewhere. Mr. Wayne, however, continued it with unremitting perseverance, and after many disappointments his labours were finally rewarded; for early in June he succeeded in finding two nests, the first that have ever been taken. His account of the interesting experience, kindly placed in my hands for publication, is as follows:—

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* Reprinted from 'Forest and Stream,' vol. xxiv. no. 24, July 9, 1885, p. 468, and from 'The Auk,' 1885, p. 346, by the kind permission of the author.

† See 'Forest and Stream,' Nov. 6, 1884, pp. 285, 286, and 'The Auk,' vol. ii. no. 1, January, 1885, pp. 65–80.

"Feeling sure that a pair of these Warblers had a nest in a swamp, I searched the place carefully many days in succession. The male was usually present, but he sang in so many different places that I could not tell where his mate and eggs were concealed. At length (on June 5) while forcing my way through a dense tract of canes, I stopped to rest and look about, feeling half disposed to give up the task altogether, when my eye was suddenly arrested by the sight of a bird sitting near at hand on what appeared to be a mass of rubbish lodged in the top of a cane. I saw almost immediately that it was a Swainson's Warbler, and advanced, when it flew and alighted on the ground, feigning lameness, but keeping perfect silence. Upon examining the supposed rubbish, I found, to my great delight, that I had at length discovered the veritable nest of a Swainson's Warbler; but to my disgust it contained only a single young bird about five days old. I shot the male shortly afterwards as it was feeding the young bird, but the female escaped. The nest was built in a cane about four feet above a pool of stagnant water.

"Having now some definite knowledge of the position of the nest, I went next day (June 6) to a neighbouring swamp where I had seen a pair of the birds. After a short search I started the female, which sat very closely, merely dropping to the ground as I brushed past the nest, and quickly gliding out of sight, simulating lameness like the female of the first nest. I waited fully half an hour before she returned accompanied by her mate. Both birds chirped like a *Parula*, and finally the female went to the nest and resumed incubation. I crept cautiously to within three feet of her, and looked at her for a few moments, then retreating to a proper distance, shot her on the nest. I afterwards secured the male also, but not easily, for he was unusually shy. This nest, like the first, was built in a cane over a pool of stagnant water, but it was placed higher, at least six feet above the water. It contained one young bird just hatched and two eggs, addled, but in every way perfect."

These eggs, with the nest in which they were found, have been very kindly sent me by Mr. Wayne for examination and description. The nest is a remarkable affair, composed mainly of leaves—chiefly of the red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), water-oak (*Quercus aquatica*), and cane (*Arundinaria tecta*)—bleached by the sun and winds or stained by long immersion in swamp-water, and loosely impacted in a large and nearly globular mass, one side of which rests between, but is in no way fastened to, the upright stem and nearly upright, slightly diverging, fascicled branches of a cane, the bottom of the structure being about four inches above the point of junction of the main stem and its fascicle. As only a little more than one third of the circumference of the nest is enclosed by these supports, it is probable that they were forced slightly outward during the process of building, for otherwise they could scarcely clasp this small portion with sufficient firmness to sustain the weight of the whole. The sides of the mass round inward at the top, which, however, is round and flat, as if a perfect globe had been first formed and the top afterwards sliced off. Near the inner edge of this flat surface is the nest proper, a deep, neatly rounded, cup-shaped hollow, smoothly and very prettily lined with needles of the short-leaved pine (*Pinus mitis*) and a few fine black roots, which curiously resemble horse-hairs. The inner walls of this cavity next the supporting canes are only about half an inch in thickness, but its outer rim is bordered by a platform from one and a half to two inches in width. Many of the leaves on the outer edge of this platform are fixed with their stems pointing obliquely upwards and outwards, forming a bristling fringe, an arrangement which may have been accidental, or perhaps was intended to give the exterior a natural and inconspicuous appearance. If the latter, the design was most happily conceived, for from the outside the whole affair looks like a bunch of old leaves. Something very like it might be made by taking the nest of our Oven-bird (*Siurus auricapillus*), tearing off the domed top, and pressing one side down among a cluster of elastic sprouts. In a word, it is a ground-nest placed in a bush, or rather a hybrid between the ground and bush types of bird architecture, loosely, yet on the whole substantially constructed, planned with rare cunning, and admirably calculated to escape detection from prying eyes.

The interior cavity measures 1·75* in diameter by 1·50 in depth; the entire nest externally 4·00 across the top, 4·50 in horizontal diameter at the middle, and about 4·00 in total depth.

The other nest is described to me by Mr. Wayne as "a rude structure, in fact a mere bunch of leaves, chiefly of the sweet gum and cane, lined almost entirely with 'pine-straw,' some rootlets, and a few strands of horsehair. Although rough outwardly, I must say that it is beautifully finished inside."

The eggs measure respectively ·75 × ·59 and ·74 × ·59. The one giving the former dimensions is almost perfectly elliptical, the opposite ends being essentially uniform in size and outline. The other is more oval, but its smaller end is still decidedly blunt and rounded. In colour both are dull dead white with a bluish tinge, so faint that it is appreciable only in certain lights, or when the specimen is placed on white cotton or by the side of a perfectly white egg, as that of a Swallow or a Woodpecker. The shell is smooth to the touch, but under a glass shows rather numerous pits or pores; it has a moderate polish, more than that of a Swallow's egg, less than that of most Woodpeckers. At first sight both eggs appear immaculate, and one is really absolutely so. The other has a single small round spot of a deep golden brown colour. This will not rub off under a free application of water and as much friction as I have dared to use; but nevertheless I am inclined to consider it merely some accidental stain.

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* The measurements given in this article are all in inches and their hundredths.

The character of these nests, their position, and the colour of the eggs which one of them contained are all alike unexpected. One would have predicted that the bird would prove to be a ground-builder, that its nest would be closely concealed, and that the eggs would be distinctly spotted; all of which goes to show how very idle any speculation in such cases is likely to prove. In respect to the eggs, it is possible that they may be normally spotted. If always immaculate, they will be unique in this respect among the eggs of North-American *Sylvicolidæ*. This point probably requires further investigation, but in a general way the mystery hitherto enveloping the breeding of Swainson's Warbler may be said to be ended. The thanks of ornithologists at large are certainly due Mr. Wayne for his important services in this connexion, services performed at no small risk to health, if not to life itself; for the Southern canebrakes reek with malaria, and mocassin snakes are dangerous neighbours. But in spite of these obstacles the life-history of the interesting bird has been worked out nearly to the end, and the pages that remain to be added are comparatively few and unimportant.—*Forest and Stream,* July 9, 1885.

Shortly after the publication of my first article on this subject, Mr. Wayne sent me two more nests of Swainson's Warbler, taken respectively June 27 and June 30, 1885. The first was built in a cane, over a pool of stagnant water, at a height of about five feet; the second, also in a cane, was at a height of at least eight feet, and over clear running water. The females of both nests were shot, thus rendering identification absolute.

The second nest was "found when the birds had just begun work, and I watched them repeatedly at their labours.

They would fly up from the ground and, hovering like a Hawk or Kingfisher, fix the leaves in place with their bills. The female laid her first egg June 26, and one on each of the following two days. I took the nest on the fifth day, when dissection of the female showed that the set was complete."

The nest taken June 27 contained two eggs, chipped and on the point of hatching. Unfortunately both were broken in blowing; but Mr. Wayne describes them as "dead white, without spots." He sends me the shells of one, which are quite immaculate.

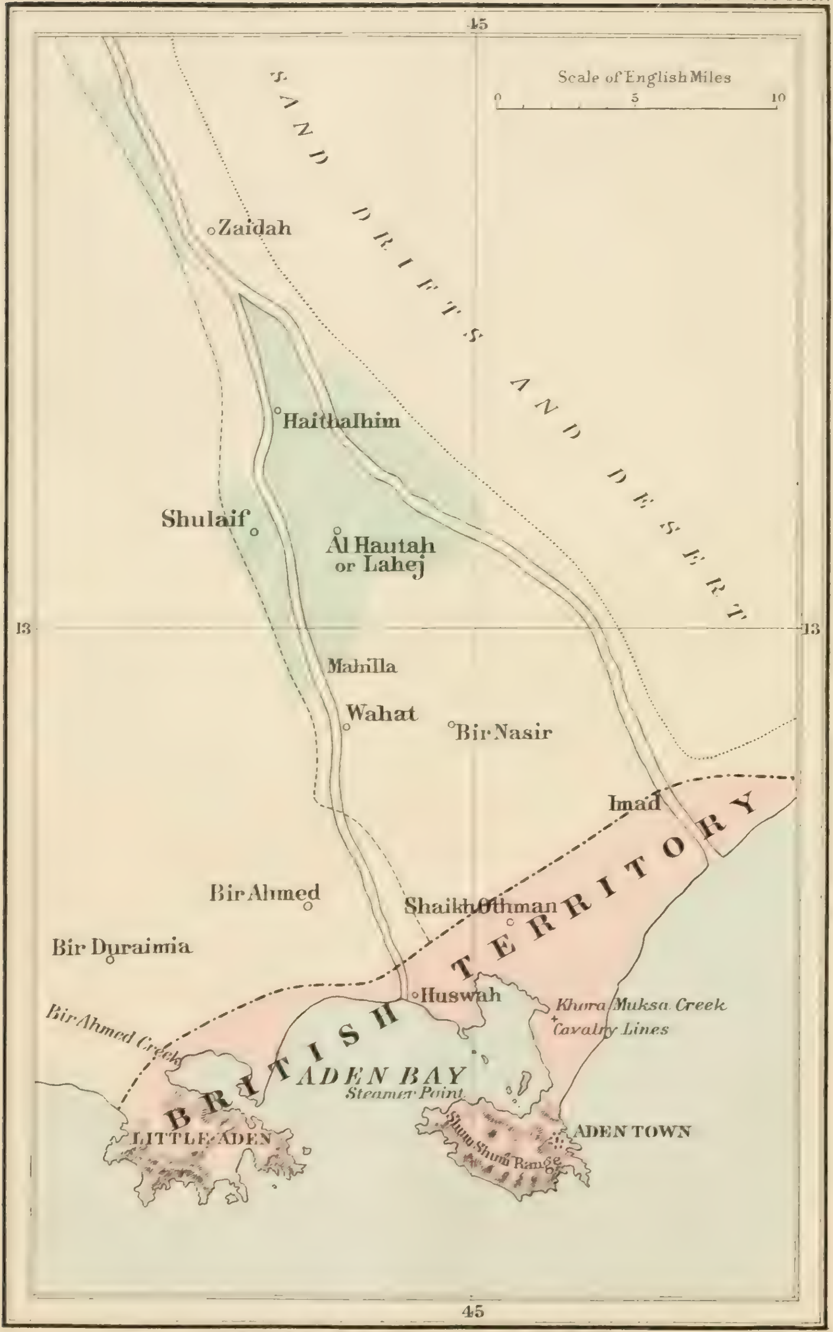
The set of three eggs just mentioned is also before me. The specimens are in perfect condition, and measure respectively ·75 × ·58, ·77 × ·58, and ·74 × ·58. They are all oval, with the smaller end decidedly blunt and rounded, and in general shape closely resemble the smaller egg of the set described in 'Forest and Stream,' vol. xxiv. no. 24, p. 468. Their ground-colour is also similar—dull white, with a faint but appreciable bluish tinge. One is perfectly plain; another, like the larger egg of the first set, has two or three minute specks, which may be genuine shell-markings; while the third is unmistakably spotted and blotched with pale lilac. Over most of the surface these markings are fine, faint, and sparsely distributed; but about the larger end they become coarser, thicker, and deeper-coloured, forming a well-defined ring or wreath. All three eggs have a slight polish, and the shells look hard and thick for those of a Warbler's eggs.

The nests are similar in general position and construction to the specimen described by me in 'Forest and Stream,' but both differ in certain important details. The one containing the set of three eggs is composed almost entirely of bleached straw-coloured cane-leaves, with an interior lining of pine-needles and a few thread-like strands of black moss, apparently *Tillandsia*. This nest is much the smallest of the four, measuring externally 3·50 in diameter by 3·00 in depth, internally 1·50 in diameter by 1·50 in depth, the greatest thickness of the rim or outer wall being 1·00. Unlike the specimen first described, it is firmly supported on all sides by the fascicled branches among which it rests. Its shape is nearly globular; and although the exterior is rather loosely formed, the structure, as a whole, is neat and compact.

The nest taken June 27 is very much larger—in fact, quite the largest specimen that I have seen, measuring externally 5·00 in diameter by 6·00 in depth, internally 1·50 in diameter by 1·25 in depth, with the rim, in places, 1·75 thick. It is shaped like an inverted cone, the apex extending down nearly to the point of junction of the numerous fascicled stems which surround and support its sides. In total bulk it fully equals the average nest of our Crow-Blackbird, while it is not nearly so finished a specimen of bird-architecture. Indeed it would be difficult to imagine anything ruder than its outer walls—composed of mud-soaked leaves of the sweet gum, water-oak, holly, and cane, thrown together into a loose mass, bristling with rough stems, and wholly devoid of symmetry or regularity of outline. The interior, however, lined with pine-needles, moss-fibres, black rootlets, and a little horsehair, is not less smooth and rounded than in the other specimens.

The acquisition of these additional nests is important, as tending to show that the position and construction of the first two nests, and the character of the eggs which one of them contained, were not exceptional. The total results of Mr. Wayne's labours may be summed as follows:—Four nests, taken respectively June 5, 6, 27, and 30, contained respectively one young bird a few days old, one young bird and two addled eggs, two eggs on the point of hatching, and three perfectly fresh eggs. All four nests were essentially similar, being bulky and loosely formed, composed mainly of dry leaves, lined with fine roots, moss-fibres, pine-needles, and horsehair, and placed in canes over water at heights varying from four to eight feet. Of the seven eggs taken, four were immaculate, two perhaps slightly spotted, and one unmistakably spotted and blotched with lilac.

The inferences suggested by these facts are:—(1) The Swainson's Warbler nests usually, if not invariably, in canes over water; (2) that it lays from one to three eggs; (3) that its eggs may be either plain, slightly speckled, or rather thickly and distinctly marked.


45
Scale of English Miles
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SAND DRIFTS AND DESERT
Zaidah
Haithalhim
Shulaif
Al Hautah
or Lahej
13
13
Mahilla
Wahat
Bir Nasir
Imad
BRITISH TERRITORY
Bir Ahmed
Shaikh Othman
Bir Duraimia
Huswah
Khora Muksa Creek
Cavalry Lines
Bir Ahmed Creek
ADEN BAY
Steamer Point
ADEN TOWN
LITTLE ADEN
Shum Shum Range
45

VICINITY OF ADEN.

Edwd Weller lith.

Another season's work on the part of Mr. Wayne will doubtless throw more light on all these points. Meanwhile, ornithologists may well rest satisfied with the knowledge thus far obtained.—*The Auk*, vol. ii. pp. 346–8.

[Specimens of Swainson's Warbler are very rare in European collections. In the British Museum the only example until lately has been a single female, obtained by Mr. Edward Newton in Jamaica (see A. Newton, P. Z. S. 1879, p. 552, and Sharpe, Cat. Birds, x. p. 233). To this has been lately added one of the fine adult males procured by Mr. Wayne, as above recorded, which was kindly sent to Sclater by Dr. Coues, and transferred by him to the British Museum in the name of the latter gentleman.—Edd.]

IV.—*On the Birds of Aden and the Neighbourhood.* By Major J. W. Yerbury, R.A. *With Notes* by R. Bowdler Sharpe, F.L.S. &c.

(Plate II.)

The peninsula of Aden (Plate II.) is situated in lat. 12° 47′ N. and long. 44° 59′ E., and is, roughly speaking, five miles in its greatest length and three miles in breadth. The centre of the peninsula is formed by the Shum-shum range of mountains, the highest peak of which rises to 1760 feet. From this range spurs run down to the sea, with deep ravines between them, ending at the sea in sandy beaches. On the north side an elevated plateau lies between the cantonment of Aden and the foot of the range, this plateau being deeply cut by watercourses. The peninsula is joined to the mainland by a low, sandy, and barren isthmus, about two miles long by three quarters of a mile broad. The general character of the country inland is a sandy plain, with salsola (near the sea), babool, and caper bushes, a little cultivation being found in the neighbourhood of Shaikh Othman and Huswah. This plain, with some small rolling sandhills, stretches almost as far as Al Hautah (Lahej), about four miles south of which cultivation commences and continues as far as Haith-al-him, about eight miles above Lahej. Just above Haith-al-him the river bifurcates, and it is between the branches of this fork that all the cultivation lies. This oasis is very fertile and produces jowari, Indian corn, telli, and other crops. Besides these fields there are several gardens, in which vegetables are grown, with groves of date-palms, almond, and other trees: grapes also are grown.

At Haith-al-him there appear to be the remains of an old garden, some fine old tamarind-trees standing there, as well as some mango, fig, and almond trees. The bund that causes the river to bifurcate is some four miles above Haith-al-him, and the river above this point runs in a single bed past Zaidah, situated about fourteen miles from Lahej*. There is a little cultivation on the left bank of the river opposite Zaidah. About eight miles beyond Zaidah the outlying spurs of the hills are met with. The country from the Barrier Gate to Zaidah is almost level, being only broken here and there by low sandhills, and the rise is probably only a few feet.

As may be supposed, the birds of Aden proper are few, the residents being confined to the following:—a Bulbul, a Dove, a Robin, a Weaver-bird, a Rock-Martin, a Kite, a Raven, the Osprey, and the Egyptian Vulture, and probably two or three more kinds of Hawk. All the above, I believe, remain and, with the exception of the Raven, breed with us, as I have seen them in every month of the year, and have found the nests of two or three of them. Some others, notably the shore-birds and Gulls, are regular visitants; most of the former being cold-weather visitors, while the latter seem to be with us all the year round. During the cold weather some two or three kinds of Chats visit us also. I have taken notes of the birds seen in the neighbourhood, their dates of occurrence, &c., and have tried to identify them; but as my books of reference have only been Jerdon's 'Birds of India,' Blanford's 'Geology and Zoology of Abyssinia,' and Von der Decken's 'Travels in Somali Land, &c.' the identifications are in some cases conjectural.

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* A map of Aden and the neighbourhood, on a scale of about 6 inches to a mile, is attached to this paper (Plate II.). The green shows roughly the cultivation near Lahej. The rivers, though shown in the map, are practically dry beds. The Huswah branch is said to come down to the sea yearly, but the Imad branch has probably not come down for many years. For further details of the geography and statistics of Aden, see Hunter's 'Statistical Account of the British Settlement of Aden' (Trübner & Co., 1877).

[Major Yerbury has sent a small collection of these birds to the British Museum, which I have identified, and to the species so determined I have attached a dagger (†). The collection sent to Mr. Hume has unfortunately been mislaid, and neither he nor I could find it at Simla. When found, Mr. Hume will send the skins to the British Museum, and, if further questions arise as to their identification, I will send a note to a future number of 'The Ibis.'—R. B. S.]

1. Egyptian Vulture. (*Neophron percnopterus.*)

This bird is a resident with us all the year round, and breeds in the high cliffs near the Main Pass gate and at two or three other places on the Shum-shum range, forming large colonies. It is found generally throughout the neighbourhood of Aden.

Besides this Vulture, I believe two other species are to be found in the neighbourhood. The first I have always taken for an immature specimen of *N. percnopterus*. It is of about the same size, but instead of being white with black wings, it is of a dirty mottled brown.

The other is only seen inland, near Al Hautah (Lahej), and is a very large bird, the back appearing to be of a light colour (grey) as compared with the dark brown of the head and wings.

2. Kestrel. (*Cerchneis,* sp. inc.)

The Kestrel is, I believe, a resident in Aden proper. I found a pair, apparently breeding, in the high cliffs above the Mahilla plain.

I fancy that two or three other birds of prey remain with us all the year round. One is apparently a Sparrow-Hawk (*Accipiter*). The others I have been unable to make out.

3. Osprey. (*Pandion haliaetus.*)

Another resident, though I fancy there are only three or four pairs in the whole peninsula. It breeds in the cliffs near the sea. The head, neck, and breast are white, the quills being darker. A pair frequent Steamer Point, and may be seen perched on the flagstaff in front of the Eastern Telegraph Co.'s office, on the rails in front of the R.A. mess-house, and elsewhere, affording a good view of the birds.

Inland, among other Hawks, one sees a very handsome Harrier, of a blue-grey colour with black tips to the wings.

4. Kite. (? *Milvus ægyptius.*)

A Kite, probably the above species, is also a resident. In Aden it breeds on the cliffs, inland on small trees. A nest containing two eggs was found by me in the month of February 1870 on a cliff near the sea. The eggs were very like those of the English Sparrow-Hawk in their markings.

5. Barn-Owl. (*Strix flammea.*)

I have only seen one Owl in Aden. It was caught in the R.A. barracks on the 29th of May, 1870, after a tremendous storm, and was presented to the Royal Artillery Institution at Woolwich. It was apparently the same as the English Barn-Owl.

Owls of some sort are reported to frequent the neighbourhood of the houses of the agents of the P. & O. and Messagerie Maritime Companies, but I have never seen them.

An Owlet (*Carine*?) was seen near Lahej in some thick *Zizyphus* jungle, but only allowed me to get a fleeting glimpse.

6. Swallow. (*Hirundo rustica.*)

Visits Aden in rough weather; it may come at any time of the year, but only remains a few days.

†7. Pale Crag-Martin. (*Cotile obsoleta.*)

A Crag-Martin is with us all the year round; it breeds in the caves.

[Major Yerbury sent me a skin of this bird, which is now recorded from a perfectly new locality for this species.—R. B. S.]

8. Swift. (*Cypselus,* sp. inc.)

Shot near Lahej, March 16th, 1883. Its gizzard was full of golden-green Heteroptera.

Swifts are seen from time to time in Aden, and are believed to be of the same species.

9. Goatsucker. (*Caprimulgus,* sp. inc.)

A Goatsucker is met with now and again in Aden. It looks like *Caprimulgus asiaticus.*

†10. Bee-eater. (*Merops cyanophrys.*)

Is common inland and visits the tanks occasionally. It is about the size of the Indian *M. viridis.*

A larger Bee-eater is to be seen occasionally in Aden; its note is like that of *M. apiaster.* It is generally seen in Aden after stormy weather.

[From Muscat the British Museum has lately received an example of an allied but new species of Bee-eater, which I propose to call *M. muscatensis.* It has a much smaller bill than *M. cyanophrys,* and quite a different shade of blue on the eyebrow.—R. B. S.]

11. Roller. (? *Coracias garrula.*)

A Roller is common inland. It is occasionally seen in Aden itself, and is apparently a resident. Gold Mohur valley, August 14, 1883; Huswah, August 5, 1883.

Another Roller was seen at Haith-al-him. It was of a light-blue colour, with elongated tail-feathers, and was probably *C. abyssinica.*

12. Cuckoo. (*Coccystes,* sp. inc.)

A Crested Cuckoo was continually seen in Aden from the 15th of June to the 22nd of July, 1883, and at Huswah for more than a month afterwards.

13. Crow-Pheasant. (*Centropus,* sp. inc.)

Is to be seen occasionally in thick jungle inland.

14. Sun-bird. (? *Nectarinia metallica.*)

Is to be seen at Huswah, Haith-al-him, Lahej, and other places inland. Those seen in the neighbourhood of Lahej in March 1883 had their long tail-feathers. I do not think any other Sun-bird is found in this neighbourhood, those seen in the cold weather being probably specimens of the above species in non-breeding dress. I fancy it is a resident.

15. HOOPOE. (*Upupa epops.*)

A regular cold-weather visitant. Seen at Aden on the 16th of September, 1883; Huswah, Sept. 9th, 1883.

[A young Hoopoe followed the 'Ballaarat' for more than 100 miles as we were going north in July, and was first seen about 400 miles up the Red Sea from Aden. It rested occasionally on the ship, and settled especially on the chains below the stern of the vessel. As some of the passengers tried to catch it from the stern-windows, it was unable at last to reach its favourite perch, and fell exhausted into the sea.—R. B. S.]

16. SHRIKE. (*Lanius,* sp. inc.)

A large Shrike of the *L. lahtora* group is common and resident inland. Another large Shrike is also occasionally seen; it is of a dingier colour than the above.

A small Shrike, shot at Aden on the 17th of April, 1883, was sent to Mr. Hume. No record was kept of the description.

†17. NUBIAN SHRIKE. (*Lanius nubicus.*)

Shot at Lahej in January 1885.

†18. PARADISE FLYCATCHER. (*Terpsiphone cristata.*)

Shot near Lahej on the 26th of December, 1884. Several were seen in non-breeding plumage.

[Not before known from Arabia.—R. B. S.]

19. BLUE ROCK-THRUSH. (*Monticola cyanus.*)

A cold-weather visitant.

†20. BLACK-WINGED CHAT-THRUSH. (*Cercotrichas melanoptera.*)

Is a resident inland, and has an agreeable little song, which, though not loud, is sweet and varied.

21. BABBLING THRUSH. (*Argya,* sp. inc.)

A Babbler, very like the Indian "Seven Sisters," is frequently seen inland.

†22. Bulbul. (*Pycnonotus arsinoe.*)

Resident, both in Aden itself and also in the neighbourhood. I found the nest with three hard-set eggs in Gold Mohur valley, at Aden, on the 17th of April, 1883. The eggs were of the usual Bulbul type, and were sent to Mr. Hume at Simla.

A larger Bulbul is occasionally seen inland.

23. Chats. (*Saxicolæ*, sp. inc.)

Two species, which I believe to be *S. œnanthe* and *S. stapazina*, are regular cold-weather visitants. More species may, perhaps, visit us in the cold weather, for I fancy I have seen a dark-coloured Chat as well.

†24. Temminck's Chat-Robin. (*Myrmecocichla melanura.*)

The Aden Robin is a resident, and is reputed to build in holes in rocks, walls, &c., but I have never come across a nest. It has a very sweet little song.

25. Redstart. (*Ruticilla*, sp. inc.)

An occasional cold-weather visitant.

26. Warbler. (Sp. inc.)

A small Warbler seems to be a regular spring visitant, several being seen in the caper-bushes on the hill-sides during May and June 1883. Skin sent to Mr. Hume.

27. White Wagtail. (*Motacilla alba.*)

A regular cold-weather visitant, appearing, too, at odd times of the year. It never remains long, excepting in the cold weather.

28. Black-headed Wagtail. (*Motacilla feldeggii.*)

A species of yellow Wagtail with a black head is occasionally to be seen inland.

29, 30. Crows. (*Corvus*, sp. inc.)

A Raven, which I think must be *Corvus affinis*, is a resident, but has, I believe, been imported. There are only three individuals, and the number does not seem to increase.

A very large Raven is seen in the desert inland.

A Crow is very common just outside the Isthmus position, but rarely comes into Aden. The plumage of most of these Crows has a peculiar rusty look; many are also marked with white. They appear to be residents, but I do not know where they breed.

†31. Wattled Starling. (*Dilophus carunculatus.*)

Shot at Huswah on the 3rd of August out of a flock of five or six.

†32. Weaver-bird. (*Hyphantornis galbula.*)

A Weaver-bird is resident at Aden. It breeds at the tanks and one or two other places in camp, and it is very common inland at Lahej.

†33. Waxbill. (*Estrelda rufibarba.*)

Common in the neighbourhood of Lahej.

34. Sparrow. (*Passer,* sp. inc.)

A Sparrow is common at Lahej and Shaikh Othman, but is only occasionally seen at Aden at the tanks.

†35. Finch-Lark. (*Pyrrhulauda melanauchen.*)

A black-bellied Finch-Lark is common about Shaikh Othman and generally in the desert districts. The birds in the neighbourhood appear to have more black, of a deeper tint, underneath than the Indian ones (*P. grisea*).

36. Crested Lark. (*Alauda cristata.*)

The Crested Lark is common inland.

†37. Desert-Lark. (*Alæmon desertorum.*)

Common just outside the Isthmus lines and generally in the desert inland. On first seeing this bird it appears strange and unlike a Lark, but on watching its habits closely they are seen to be more truly Lark-like than they appear at first.

38. Green Pigeon. (*Treron,* sp. inc.)

A *Treron,* probably *T. abyssinica,* was found in a large flock at Haith-al-him in March 1883. Unfortunately, all those shot were eaten, and no record was kept of their colour, dimensions, &c.

39. TURTLE-DOVE. (*Turtur,* sp. inc.)

A resident, breeding at the tanks and in some of the water-courses on the Shum-shum plateau.

Three or four more kinds of Doves are to be met with inland, while both in Aden itself and inland also some Pigeons (*Columba livia*) have become wild.

†40. LONG-TAILED DOVE. (*Œna capensis.*)

Common at Lahej all the year round, but appears to visit Huswah and Shaikh Othman only in the summer and autumn. A nest with two eggs (sent to you) was found in a low salsola bush at Huswah on the 9th of September, 1883. The bird sat so close that I tried to catch her in a butterfly-net.

41. SAND-GROUSE. (*Pterocles exustus.*)

Very common inland, particularly in the month of March, when numbers are to be seen in the morning, about 8.30 A.M., going down to the streams to drink. It is called "Uht-Uht" by the Arabs of the Lahej district, presumably from its note.

†42. LICHTENSTEIN'S SAND-GROUSE. (*Pterocles lichtensteini.*)

Found in a large flock of from eighty to one hundred individuals at Shulaif, near Lahej, in March 1883. Since that time I have only seen these birds in small flocks of four or five. Of two, which I killed out of a flock of five near the head of the Bir Ahmed creek on the 16th of December, 1884, the dimensions were as follows :—

♂. Expanse 21·4 inches, length 11·1, wing 2·5. Crop full of seeds, apparently of salsola and baubul.

♀. Expanse 18·2 inches, length 10·6, wing 2·1. Food as before. Ovaries small.

Bare skin round the eyes yellow; legs light dingy yellow-ochre.

†43. BLACK-HEADED PARTRIDGE. (*Caccabis melanocephala.*)

A large Chukor, called "Ukhob" by the Arabs, is common at Haith-al-him and along the road to Zaidah. It frequents the ravines running down to the river, at times lying very close in the bushes. They are found in flocks of from six to twelve individuals, and are very strong on the wing, carrying away a lot of shot. A female killed on the 22nd of March, 1883, had her ovaries very large, and this is evidently the breeding-season. One was shot near Zaidah on the 30th December, 1884. Hume, in the 'Game Birds of India,' says that *C. chukar* is found near Aden, but I have never seen it. It is probably met with in the hills beyond Zaidah, a point I have never reached.

44. Common Quail. (*Coturnix dactylisonans.*)

The Common Quail is a regular cold-weather visitant, I fancy from October to May. Numbers are brought into the Aden market at times from the interior. It is not uncommon even in Aden itself.

†45. Bustard. (*Eupodotis arabs.*)

The "Balawan" of the Arabs is fairly common round Lahej. I shot one at Haith-al-him on the 19th of March, 1883. This skin was sent to Mr. Hume. Again I obtained some near Lahej in December 1884 and January 1885. The gizzard of these last specimens contained fragments of locusts, small ground-beetles, and ripe jowari seeds (*Sorghum vulgare*). The ovaries of all the females were very small. It is a resident species.

A Houbara and a smaller Bustard (? *Otis melanogaster*) are, I believe, also occasionally found in the neighbourhood.

46. Golden Plover. (*Charadrius pluvialis.*)

A Golden Plover is an occasional cold-weather visitant.

47. Thicknee. (? *Œdicnemus scolopax.*)

The Stone-Plover is common in the neighbourhood during the cold weather. It is often seen in Aden itself.

48. Turnstone. (*Strepsilas interpres.*)

A regular cold-weather visitant. A male, shot on the 18th of May, 1883, was assuming its summer plumage.

49. Crab-Plover. (*Dromas ardeola.*)

A regular visitant during the cold weather.

50. **Oyster-catcher.** (*Hæmatopus ostralegus.*)
Appears to remain here all the year round, but I doubt its breeding.

51. **Snipe.** (*Gallinago,* sp. inc.)
A Snipe is occasionally met with in the flooded fields near Lahej and also in the bed of the river, but I have only seen one.

52. **Terek Sandpiper.** (*Terekia cinerea.*)
Cold-weather visitant, when it is met with on the mud-flats up the harbour.

53. **Curlew.** (*Numenius arquata.*)
54. **Whimbrel.** (*Numenius phæopus.*)
Appear to remain all the year round.

55. **Dunlin.** (*Tringa cinclus.*)
A regular winter visitor. Those shot in May were assuming the summer plumage.

56. **Sanderling.** (*Calidris arenaria.*)
Cold-weather visitant.

57. **Common Sandpiper.** (*Actitis hypoleuca.*)
Common on the rocks and on the coast all the year round.

58. **Greenshank.** (*Totanus ochropus.*)
59. **Redshank.** (*Totanus calidris.*)
According to Mr. Chevallier, the latter species is common on the mud-flats up the harbour. The Greenshank, Redshank, and Sanderling are often seen in large flocks.

60. **Green Sandpiper.** (*Totanus hypoleucus.*)
Shot by Mr. Chevallier near Lahej in January.

61. **Stint.** (*Tringa,* sp. inc.)
Seen by Mr. Chevallier on the mud-flats.

62. **Courier Plover.** (*Cursorius,* sp. inc.)
A Courier Plover was shot by Mr. Chevallier on two occasions, near the Barrier Gate and at Huswah. I also saw two at Haith-al-him on the 30th of December, 1884.

There are probably more species of Plover to be found up the harbour on the mud, notably one like the Dotterel (? *Ægialitis geoffroyi*).

63. Heron. (*Ardea*, sp. inc.)

Two Blue Herons, one large, the other small, are to be seen, on and off, all the year round on the mud-flats up the harbour, and they are, perhaps, more frequent during the cold weather.

64. Egrets. (? *Herodias*, sp. inc.)

One shot at Lahej in January had a buff crest, yellow eyes, and greenish-black legs. A quantity of Egrets were breeding in March 1883 in some small baubul trees near a village about three miles from Lahej. Egrets of various sorts are often seen on the mud-flats up the harbour.

65. Spoonbill. (*Platalea leucorodia.*)

A cold-weather visitant.

66. Ibis. (Sp. inc.)

A dark-coloured Ibis was seen near Zaidah. I believe it breeds in the high tamarind-trees near Haith-al-him.

67. Flamingo. (*Phœnicopterus roseus.*)

A regular visitant in the cold season.

68. Common Teal. (*Querquedula crecca.*)

A male and female were shot in the river between Haith-al-him and Zaidah on the 29th of December, 1884. I have only seen this pair, but I believe it to be a regular cold-weather visitor. All Ducks are called "Bŭt" by the Arabs. Mr. Chevallier has shot Ducks near Little Aden, also up the Khora-Muksa creek. Other species of Duck are doubtless to be found during the cold weather, but I have never seen them.

69. Hemprich's Gull. (*Larus hemprichi.*)

Found here all the year round. I do not think that any Gull or Tern breeds on Aden. If it does, it will be probably on the high cliffs near Round Island.

[This pretty medium-sized Gull is quite a feature of the voyage in the Red Sea. On our journey down in May several appeared behind the ship when we were about opposite Suakim, and from that latitude until we arrived at Aden we were never without a few in our company. They were perfectly tame, and came so close to the stern of the 'Ancona' that the colour on the bill was distinctly visible. All were then in full breeding-plumage, with very distinct hoods. On the return voyage in July the Gulls were still in breeding-dress, but evidently worn and abraded. While we were laying off Aden in quarantine they came round the 'Ballaarat' in numbers, often sailing within a few feet of the side of the vessel. Some accompanied us for about a day's journey up the Red Sea, but they were not met with on our return journey so far north as in May. Although this Gull has been found on the Mekran coast and as far east as Karachi by Mr. Hume, we saw none after leaving Aden.—R. B. S.]

70. Black-backed Gull. (*Larus*, sp. inc.)
Common in the cold weather.

71. Great Black-headed Gull. (*Larus ichthyaetus.*)
Fairly common in the cold weather.

72. Swift Tern. (*Sterna bergi.*)
This is here all the year round, I believe.

[About 460 miles north of Aden, in the Red Sea, we came across a large flock of these Terns in mid ocean, all busily engaged over a shoal of fish. Their cries could be heard a long distance off, and there were quite a couple of hundred in the flock.—R. B. S.]

73. Little Tern. (*Sterna minuta.*)
Killed at Bundu Manyah, on the Somali coast, on the 27th of April, 1884. This species also occurs at Aden.

There is, I believe, another species of Tern, intermediate in size between the above two species. [This will probably be *Sterna albigena,* of which species I saw a pair in the Indian Ocean, about 100 miles beyond Aden, on the 18th of July.—R. B. S.]

74. Tropic-bird. (*Phaethon indicus,* Hume.)
A cold-weather visitant.

75. Pelican. (*Pelecanus onocrotalus.*)

One shot on the 1st of June, 1883: a regular visitant in May, when several were seen. A skin was sent to Mr. Hume.

76. Cormorant. (*Phalacrocorax*, sp. inc.)

A brown Cormorant seen in numbers on a detached rock below the lighthouse at Marshag.

V.—*Notes on the Birds of the Upper Engadine.*

By Henry Seebohm.

It is a long climb from the plains of Lombardy to the valley of the Upper Engadine. Lake Como is a little more than a thousand feet above the level of the sea; a further climb of rather more than fifteen hundred feet brings the traveller to Promontogno, and a long two thousand feet more lands him at Casaccia, but there is still more than one thousand feet of zigzags before the top of the Maloja Pass is reached. The new Maloja Hotel is perhaps the finest in Switzerland; it is nearly six thousand feet above the level of the sea, and forms a centre of unusual interest. From a geographical point of view it may be regarded as on the water-parting between the Italian and Austrian river-systems (the one leading through the Valley of the Po to the Adriatic, and the other through that of the Danube to the Black Sea), whilst it is less than six miles from the valley of the Rhine, and only about sixty miles from the source of the Rhone. To the geologist the scarped and scored rocks on the Kulm (the culminating point of the pass) and the heaps of gravel and the piles of granite boulders point out the course of the ancient glacier, now shrunk back a thousand feet up the Forno valley, with little but its moraines to tell the tale of its former greatness. The artist may find views, too grand for transference to paper or canvas, by ascending any of the smaller spurs of the mountains, whence he can look down a couple of thousand feet towards Italy, or by passing along the chain of lakes to St. Moritz, or by climbing up the icy peak of the Pitz Bernina, 13,300 feet above the level of the sea. To the botanist the Maloja Hotel forms a base of operations where, even in August, the spring alpine flora may be worked without too much climbing, as it is situated almost at the limit of forest-growth. The commonest trees are small examples of the Siberian cedar (*Pinus cembra*), and the larch and spruce are small and stunted. On the other hand the rhododendrons are in all their splendour, especially in June and early in July. In August it requires a climb of from one to two thousand feet to reach the most characteristic alpine plants—the deep blue gentians on the grass, the rarer saxifrages on the rocks, and the beautiful purple toad-flax (*Linaria alpina*) on the screes. Higher still the almost stalkless alpine forms of the cobalt-blue forget-me-not, the white stitchwort, and the prussian-blue rampion (*Phyteuma*) vie in beauty with the deep-red flowers of the alpine campion, the pale-pink soldanella, and the grey edelweis.

The agriculture of the Upper Engadine is extremely simple. The valley is meadow broken up with rock, and the mountain is rock interspersed with pasture. From the former two or three crops of hay are cut every season, and on the latter flocks of sheep and herds of cows and goats graze. On the approach of winter men, cattle, and hay migrate down the pass almost into Italy.

The birds of this district are comparatively few, but amongst them are several of special interest to the British ornithologist. Amongst the pines the most interesting species are the Nutcracker (*Nucifraga caryocatactes*), the Crossbill (*Loxia curvirostra*), and the Mealy Redpole (*Fringilla linaria*). On the meadows and pasture Alpine Pipits (*Anthus spinoletta*) abound, and on the rocks Black Redstarts (*Ruticilla tithys*) are common. Occasionally a Wall-creeper (*Tichodroma muraria*) may be seen in a narrow gorge, flitting like a butterfly on the face of the precipice, and still more rarely a passing glimpse of an Alpine Swift (*Cypselus melba*) may be caught as it dashes past the crumbling granite or serpentine amidst the ice and snow of the higher peaks. Both the Common Sandpiper (*Totanus hypoleucus*) and the Marsh-

Sandpiper (*Totanus stagnatilis*) frequent the shores of the lakes in the company of numerous White Wagtails (*Motacilla alba*). On the mountain-streams the Grey Wagtail (*Motacilla sulphurea*) is common, and the Mediterranean form of the Water-Ouzel (*Cinclus aquaticus albicollis*) ascends them up to eight thousand feet above the level of the sea. I saw Ring-Ouzels (*Merula torquata*) among some alders behind the hotel, now and then a pair of Kestrels (*Falco tinnunculus*) were to be seen hovering over the valley, and once I watched for some time an Icterine Warbler (*Hypolais hypolais*) in a larch tree just below the head of the pass. The Crested Tit (*Parus cristatus*) was not quite so common as its congeners, and, curiously enough, I saw no trace of the ubiquitous Sparrow. Chaffinches (*Fringilla cœlebs*) were remarkably abundant, and frequently uttered a note which I have never heard in this country: it might be represented by the letters *rrt*. The Carrion-Crow (*Corvus corone*), when it emigrated from East Siberia, evidently ascended the Danube and the Inn and reached North Italy, thus isolating the Hooded Crows of Southern Italy and Greece from the main colony in East Europe and West Siberia. We saw the former every day, but we did not meet with either the Rook, the Magpie, or the Hooded Crow. On the other hand, a small flock of Choughs (*Pyrrhocorax graculus*) frequented the shores of the lake, and parties of Alpine Choughs (*Pyrrhocorax alpinus*) sometimes came suddenly upon us as we were gathering alpine flowers in the mountain-clefts, to their great surprise and evident consternation. Ravens (*Corvus corax*) were occasionally seen, but no Jackdaws.

I did not succeed in finding either the Ptarmigan or the Snow-Finch, but was extremely delighted to make the acquaintance of the Alpine Accentor (*Accentor alpinus*). This bird was by no means common, and was extremely local; but I met with it on three occasions, and was able to solve several knotty points in its habits which have always been a puzzle to me. I am not aware that any British ornithologist has described its habits from personal observation, and as it was one of the few European birds which was not personally known to Naumann, our knowledge of it is meagre in the extreme. All my efforts to discover it failed until the 14th of August, when our party ascended the Pitz Lunghino (9120 feet) in order to trace the Inn to its source. For the first thousand feet above the Maloja the Pipits and Black Redstarts were the commonest birds, but after we had passed above the last stunted bush and had nearly reached the gentian and soldanella ground, an unfamiliar note caught my ear, a rich liquid *chich, ich, ich, ich,* as gurgling as the note of the Lark. I soon caught sight of the bird perched upon a rock, scarcely to be distinguished at a distance from an Alpine Pipit. My first thought was that it must be one of those birds making a feeble effort to sing; but in a short time the bird came much nearer, and began to hop about, sometimes on the short grass, but more often on the rocks. The fact of its hopping like a Robin, instead of running like a Wagtail, proved that it could not be a Pipit; but fortunately it possessed one habit in common with that bird, namely, a propensity to indulge its curiosity. We sat quite still, and presently it flew to a rock not more than thirty feet from us, where its rich chestnut flanks could be seen without glasses. It was exceedingly tame and did not seem at all alarmed at our presence, though it was apparently watching us. A writer quoted by Naumann says that the Alpine Accentor does not hop but runs. This is unquestionably a mistake. There can be no doubt whatever that its favourite mode of progression is a hop: I made a note of the fact in my pocket-book in the presence of the bird itself; thus one of the alleged discrepancies between its habits and those of its cousin, our common Hedge-Sparrow, was disposed of. Another alleged fact respecting the Alpine Accentor is that it ducks its head and jerks up its tail every time it utters its note, after the manner of the Chats. The fact also that it lays blue eggs, like the Chats, suggested a relationship to those birds. The alleged fact is, however, a myth. I heard the Alpine Accentor utter its note at least fifty times, and I could perceive nothing of the habit alluded to. On the other hand, the Black Redstart (which, with its relatives, is allowed by courtesy to set up a genus distinct from the Chats) acts precisely in the manner described, and as it frequents the same locality, it is not unlikely that the habits of a female Black Redstart have been transferred to the Alpine Accentor. The flight of the latter bird is performed with very pronounced and very short undulations. A week afterwards I had an opportunity of watching a pair of Alpine Accentors searching for food on the rocks. They creep about among the stones, and almost in the same way that the Hedge-Sparrow shuffles along amongst the roots and the tree-trunks. When they alighted on a rock they did so with expanded wings and outspread tail, sometimes approaching the ground in a curve, in both particulars resembling a Starling. The note was occasionally uttered on the wing.

The Pipit was extremely common on the pastures, and still more so on the meadows after the hay had been removed. Some of the young seemed to be only recently fledged, and their parents were still very anxious about them. We devoted nearly an hour to one pair of birds, as their actions appeared to signify that the young had not yet left the nest. The hen bird had caught a moth, which she was anxious to convey to her children, and stood with it in her beak, afraid to reveal the whereabouts of her nest. For a long time she remained perched on a rock, then occupied alternately the summits of two small larches, then returned again to the rock, and occasionally flew up to within a few yards of where we were sitting, and hovered near us to examine us more minutely. All this time she kept up, in spite of the moth in her beak, her monotonous alarm-note, *sit, sit, sit,* sometimes stopping to call to her mate, who did not venture so near us, with a soft *ist, ist.* She may, after all, not have had a nest: at any rate she tired us out, and we gave up the quest.

The Black Redstarts were also very demonstrative, many of them having still scarcely fledged young. Their alarm-note of *tek, tek, tek* was very often heard, and not unfrequently their call-note, *tzi, tzi, tzi.* One of these birds had a nest in a cleft of the rocks not more than a hundred yards from the hotel, and was sitting on two pure-white eggs as late as the 10th of August: no doubt a second brood. The Black Redstarts were very expert at catching flies in the air.

On the way home we stopped a few days at Constance. Close to the Insel Hotel is a most interesting aviary, full of Ducks, Geese, and Swans. Among the former were a pair of Pochards and a pair of Tufted Ducks, perfectly tame, though able to fly. A branch of the Rhine runs through this aviary, and the observer can lean over the iron railings and look down into the blue-green water and see the weeds at the bottom. It was very curious to watch the Ducks dive; their wings were never used; everything was done by their feet, and hard enough they worked. With their outspread toes as a fulcrum, they made a headlong dive into the water, and as they somewhat slowly but steadily descended to the bottom, their feet were working as hard as they could go against the natural buoyancy of their bodies. As soon as they had gathered as much weed as they wanted, they raised their heads, stopped the rapid motions of their feet, and soon rose like corks to the surface. At other times they seemed to be fast asleep on the surface of the water, the head snugly tucked under the wing, and one foot apparently moving mechanically to prevent them from drifting down with the current. Sometimes they spent hours preening their feathers whilst swimming, occasionally almost lying on their backs in the water to smooth out the feathers of the underparts. I have never seen any place where the habits of these birds could be so easily observed.

At St. Gall I paid a visit to Dr. Girtanner, and was much interested in three or four Wall-creepers which he had in a cage. He told me that they moulted out of their first plumage in their first autumn, and acquired the black on the underparts early in spring.

VI.—*On* Lanius excubitor *and* Lanius major.

By Robert Collett.

In the eighth volume of the 'Catalogue of Birds in the British Museum,' Dr. Gadow has established, under the genus *Lanius*, a number of species more or less closely allied to *L. excubitor*, all of which are kept distinct with definite specific characters, in part new or amended by the author. But these "species" will, I have little doubt, ultimately prove to represent partly mere climatic races, originating in all directions from one typical species, and which, by various transition-stages, are ultimately connected, partly mere individual varieties, the origin of which, as a rule, cannot be shown to have any definite relation with age, locality, or the season of the year.

In the following pages I propose to offer a few remarks concerning the well-known form described in Gadow's Catalogue (p. 239) under the name *L. major*, Pall., the right of which to be regarded as a true species by the side of *L. excubitor* has, in all probability, been treated of oftener than any of the other forms, has been admitted by many, and disputed, perhaps, by more.

This question would seem to have occupied the attention of ornithologists more especially since Cabanis, in 1873 (Journ. f. Orn. 1873, p. 75), recorded an individual killed near the Wolga, in which he recognized Pallas's *L. major*, and which, to the best of his knowledge, was the first obtained in Europe. It is a well-known fact that, in the following years, accounts appeared of other examples of the said species or form, stating it to have been long known in European museums, nay, to be even of frequent occurrence.

Here, too (Norway and Denmark), the subject has been treated of and brought under discussion. Whereas Dr. Stejneger, in 'Archiv f. Mathematik og Naturvidenskab' for 1878 and 1880 (Christiania), keeps the two forms apart as separate species, I have, in the volume of the same journal for 1879, endeavoured to show that the presence or absence of the white bases on the secondaries affords no manner of guidance; and hence that *L. major* does not admit of being distinguished by reliable characters from *L. excubitor.* When prosecuting my investigations, I had before me, as seen in the woodcuts furnished (p. 275) in the said journal, individuals from the southern districts of Norway, comprising alike the most typical specimens of *L. major,* in which the secondaries exhibit no traces at all of any white bases, and others in which the first indications of such a basal mark had made their appearance; furthermore, individuals with the said indications expanded to a distinct spot of about 15 mm. in breadth. Such individuals we might, with perfect indifference, term *L. major* or *L. excubitor.*

From these transition-individuals we have an unbroken series till the inner spot on the secondaries becomes the white mark in the "typical *L. excubitor.*" Similar transition-series, or individuals, have been shown to occur by Mr. Seebohm (Ibis, 1880, p. 185), by Dr. Finsch (Verh. k.-k. zool.-bot. Ges. Wien, 1879, p. 188), and by various other ornithologists.

Dr. Homeyer, in particular, has dwelt most emphatically on this subject (Journ. f. Orn. 1880, p. 178), and few, if any, authors have hitherto had so extensive a material on which to base their researches, since that ornithologist was enabled to submit at one time as many as sixty-three specimens of *L. major, excubitor,* and *homeyeri* to minute comparison. But even had the whole intervening series been wanting, it would still be impossible to retain the single-marked form as a separate species.

As I have previously stated (Arch. f. Math. og Naturv. 1879, p. 279), Mr. Meves, of Stockholm, has, in his collection, two young birds, both shot Aug. 12th at Quickjock, in Lapmark, which he has reason to believe were of the same brood. One of these is a double-spotted male (*L. excubitor*), the other a single-spotted female (*L. major*). Now, that these birds were really hatched together, it would seem, from the comparatively advanced season of the year, difficult to decide; they had, most likely, already moulted their nest-plumage, and may have belonged to different broods.

In the summer of 1884, when on the Dovre Fjeld, I made an observation, concerning which there can be no question whatever. On June the 30th, I came across, in the uppermost pine-forests near Hjerkin (a locality well known to English tourists), a family of Shrikes, comprising, along with the parent birds, a whole brood of young ones just fledged, and habited accordingly in their peculiar nesting-plumage. As with all young birds, the feathers in this dress were soft and loose, though grown to their full length. Of these young ones, which had unquestionably been hatched together, I shot three; the rest flew off in company with the parent birds into the forest.

Two of those killed were males and in every respect typical specimens of *L. excubitor*, the spot on the secondaries being large and snowy white, with the normal length of 26 mm., in one even 27 mm. The third example, a female, was an equally typical specimen of *L. major*, not having the faintest trace of any white bases on the secondaries.

In other respects, the differences between these three individuals were slight in the extreme; the female and one of the males exhibited a somewhat darker tone on the back than did the other male, which had a clear pearly-grey tint, precisely as in very old and rich-coloured specimens. The brownish-grey edgings observable in most individuals towards the fall of the year were almost wanting in the two males, but distinct in the female. The underparts were alike; in all of them the vermiculations on the loose downy feathers were not sharply defined, as is often the case in the autumn and winter plumages of young birds, but narrow, closely arranged, and broken up, as it were, into points; more especially on the breast and the sides of the neck there was nothing left but the points. The black spot on the first tail-feather was large in the female (about 35 mm.), in one of the males normal (about 20 mm.), in the other small and on one side separated by the white colour.

Last summer (1885) I made a similar observation in Finmark, and shot from a nest a male and a female, of which the former was in every respect a typical specimen of *L. ex-*

cubitor, the female a single-spotted *L. major,* without a trace of any inner spot on the secondaries. On June 30th, when, in company with Mr. Landmark, Director of the Salmon Fisheries, I visited Finmark, I found near the Tana-Elv a Shrike's nest containing six young. It was placed in a birch tree on a sterile terrace, thinly grown and clad with lichens, about fourteen English miles from the mouth of the river. The nest was easily seen, and constructed of dry twigs together with straw, thickly lined with white feathers of the Willow-Grouse, as also a little wool and the cotton of *Salix lanata.* The inner diameter of the nest measured 90 mm. The young were of about the size of Sparrows and remarkably naked, only a few sprouting feathers being visible, but not a trace of down.

The parent birds displayed great anxiety and were easily shot. The male proved to be a normal *L. excubitor,* with exceedingly pure colours, and had not a trace of vermiculations on the white abdomen; the female was an equally typical specimen of *L. major,* and exhibited, on the whole, somewhat darker colours than the male; thus, the rump was but very little lighter than the back, whereas in the male it was a pure white. The measurements were as follows:—♂. Total length 271 mm., wing 117 mm., tail 114 mm. ♀. Total length 257 mm., wing 113 mm., tail 113 mm.

Hence, having examples to show, both that the single- and the double-spotted form may occur, pure and typical, in one and the same brood, and also that the two forms pair together, it seems difficult to defend the retaining of "*L. major*" as a species distinct from *L. excubitor.* In order to show to what remarkably wide extent this species is found to vary, I will enumerate below the twenty-six specimens of *L. excubitor* from Norway now preserved in the Christiania University Museum. Most of these were shot or collected by myself; and hence the sex, date, and exact locality can be given for well-nigh all. The specimens could, I feel sure, be arranged with equal correctness in seven as in two different categories.

A. SPECIMENS IN SPRING PLUMAGE (March to May).

a. Typical *L. excubitor.*

One male.—No vermiculations; basal spot on secondaries large (29 mm.). Aker (Christiania), 2nd March, 1877.

Two females.—One without, the other with, faint vermiculations; basal mark on secondaries normal (in ♀ short, 18–20 mm.); the white on first feather impure, being mixed with black. Aker, 3rd May, 1881; 19th April, 1882.

b. Nearly typical *L. major.*

One male.—Vermiculations comparatively distinct; indication of basal spot on secondaries occurring as a short whitish-grey spot (10 mm.) on the third feather. Hamar, 17th April, 1885.

c. Typical *L. major.*

One male.—No vermiculations; basal spot on secondaries absolutely wanting; plumage worn, only a few new feathers. Aker, 24th April, 1881.

One female.—No vermiculations; basal spot on secondaries indicated only by an almost imperceptible sprinkling of white on one single feather. Aker, 1st May, 1881.

d. Intermediate between *L. excubitor* and *L. homeyeri.*

One male.—Abdomen and rump entirely white; first tail-feather white, with the quills black in the middle; basal spot on secondaries long (30 mm.), extending beyond the coverts. Guldalen, near Throndhjem, 1st May, 1881*.

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* This specimen approximates *L. homeyeri* more than *L. excubitor.* In *L. homeyeri* the rump is described by some authors (Ibis, 1881, p. 51) as grey, by the majority, however, as white—a striking proof of the difficulty with which the characters admit of being determined in this as in the other forms. In the specimen from Guldalen the said part and also the abdomen and the tips of the secondaries are snowy white; the inner basal spot on the secondaries reaches to the middle of the feathers.

Not improbably it was a similar individual that Seebohm has recorded from Krasnoyarsk, and regarded as a hybrid between *L. leucopterus* and *L. excubitor* (Ibis, 1882, p. 421).

B. SPECIMENS IN SUMMER PLUMAGE (June to August).

a. Typical *L. excubitor.*

One male.—Abdomen snowy white, the rump of a well-nigh pure white; outermost tail-feather almost wholly white; basal mark on secondaries normal (23–25 mm.). Tana, East Finmark, 30th June, 1885.

b. Typical *L. major.*

One female (had paired with preceding specimen).—Faint traces of vermiculations; outermost tail-feather with a large and broad black spot; basal spot on secondaries absolutely wanting. Tana, 30th June, 1885.

C. SPECIMENS IN NESTING-PLUMAGE (June to July).

a. Typical *L. excubitor.*

Two males (hatched together).—Basal spot on secondaries normal (26–27 mm.). See above, p. 32. Dovre Fjeld, 30th June, 1884.

b. Typical *L. major.*

One female (of the same brood as the two before mentioned).—Basal spot on the secondaries absolutely wanting (see above, p. 32). Dovre Fjeld, 30th June, 1884.

D. SPECIMENS IN AUTUMN PLUMAGE (September to November).

a. Typical *L. excubitor.*

Five males.—One without vermiculations, and with a large basal spot on the secondaries (28–29 mm.); outermost tail-feather almost wholly white; perhaps an old specimen. The other four specimens with traces of vermiculations and the basal spot on the secondaries normal (26 mm., in one example 24 mm.) Aker, 8th Nov., 1876, 12th Nov., 1881, 13th Nov., 1884; Romedal, 4th Oct., 1884; Maalselven, near Tromsö, Sept. 1880.

One female.—Broad and distinct vermiculations; basal spot on the secondaries normal (18–20 mm.), its colour not quite pure; traces of vermiculations on the upper and lower tail-coverts. Aker, 4th Nov., 1881.

b. Nearly typical *L. excubitor.*

One male.—An unusually large and light-coloured specimen; total length 276 mm. Traces of vermiculations; basal mark on secondaries rather short (18 mm.), impure in colour, and mixed with black. Aker, 8th Nov., 1884.

c. Intermediate between *L. excubitor* and *L. major.*

One male.—Traces of vermiculations; basal spot on secondaries short (14–16 mm.), colour impure and mixed with black. Aker, 22nd Oct., 1884.

One specimen (sex undetermined).—Faint vermiculations; basal spot on the secondaries short (10–11 mm.). Odalen, Oct. 1868.

d. Nearly typical *L. major.*

One male.—Traces of vermiculations; faint indication of basal spot on second feather of the secondaries (8 mm.). Aker, 12th Sept., 1884.

e. Typical *L. major.*

One male.—No vermiculations; basal spot on secondaries indicated by an almost imperceptible sprinkling of white on a single feather. Hamar, 8th Nov., 1885.

f. Intermediate between *L. excubitor* and *L. borealis.*

One male.—Broad vermiculations on abdomen and upper tail-coverts; upper surface mixed with reddish grey; basal spot on secondaries short (14–15 mm.), colour impure; first ail-feather with the black spot large (41 mm.). Hamar, 5th Nov., 1881*.

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* This specimen is hardly distinguishable from a female specimen of *L. borealis* from Nevada (28th March, 1868, Smiths. Inst.), the only example of that form at present in our museum, save in one respect, viz. that the Norwegian individual has a short basal mark on the secondaries, a character, perhaps, never met with in the true *L. borealis.* But the said mark is wholly concealed by the coverts, and if these are not moved aside the two examples would pass as absolutely identical. From my own investigations, I cannot venture to decide whether *L. borealis* also exhibits traces of a similar basal mark on the secondaries. In any case *L. borealis* can hardly be otherwise regarded than as one more link in the long unbroken series of varieties that *L. major* or *L. excubitor*—whichever form be taken as the original—sends forth in all directions.

E. SPECIMENS IN WINTER PLUMAGE (December to February).

a. Typical *L. major.*

Two males.—Traces of vermiculations. In one the basal spot on the secondaries absolutely wanting, in the other indicated by a white point (3 mm.) on a single feather. Aker, 21st Dec., 1872; 10th Feb., 1885.

L. excubitor, in its most typical form, *i. e.* having the two wing-spots well developed, therefore occurs at all seasons of the year, and in both sexes; this is the case even with young in the early autumn, nay, even in their first plumage ("nesting-plumage"), at least with the males.

In the autumn traces of the vermiculations become perceptible, save in the case of exceptional specimens (probably old birds). In the spring and summer the transverse bands, as a rule, disappear.

The size of the black spot on the outermost tail-feather varies exceedingly, but most frequently is smaller than in the dark form ("*L. major*").

A transition-form to *L. homeyeri,* or an individual exhibiting a surplus of white, was a male in spring.

"*L. major,*" in its typical form, without the slightest trace of any basal spot on the secondaries, may likewise, it would seem, occur at all seasons of the year, and in both sexes, as also in the nest-plumage; the majority, however, have proved to be females.

The vermiculations across the abdomen are frequently retained in this form; they had, however, as with *L. excubitor,* disappeared in the two spring specimens—one a male, the other a female—and in one autumn specimen, a male. On the other hand, they were present in a female with summer plumage.

The intermediate forms have, as a general rule, been autumn examples; one only, approximating very closely the typical *L. major,* was a male in the spring. Of these autumn individuals, two stood equally near to both forms, one approximated closely the typical *L. excubitor,* and one exhibited a remarkable surplus of reddish grey (transition to *L. borealis*).

All these transition-forms (possibly with but one solitary exception) were males; also the last-mentioned variety.

The question as to when and in what condition these specimens of *L. excubitor*, either with no or with an imperfectly developed basal spot on the secondaries, are found to occur, can hardly at present be satisfactorily settled.

First of all, it is evident that the presence or absence of the basal spot on the secondaries cannot be dependent on age, since both single-spotted and double-spotted individuals belonging to the same brood occur even in the nesting-plumage.

Furthermore, should the varying colour of the secondaries arise from a gradual change, and the imperfectly developed basal spot in the course of the winter and spring become a perfect one (as with the primaries of *Plectrophanes nivalis*, which pass, without moulting, from brownish grey to white), a change in this respect would necessarily take place with such individuals also as exhibit a very small or no basal spot whatever on the secondaries, and not in transition-specimens alone.

Thirdly, sex exerts no decided influence, although single-spotted individuals are more frequently found to be females than males.

Finally, as regards the latitude, it is generally admitted that the single-spotted form (comprising also less typical or transition individuals) belongs to the northern or north-eastern tracts of the Palæarctic Region, whereas the typical *L. excubitor* inhabits Western and Central Europe. Meanwhile we must bear in mind that every year, now that attention has been drawn to the subject, more or less typical specimens of the single-spotted form (*L. major*, Cab.) are shown to occur regularly or commonly in most tracts along with the normal *L. excubitor*, extending to Austria and Hungary; while, as stated above, the true *L. excubitor* has also been found to inhabit and breed in the Arctic regions (Finmark). Other examples are recorded from Archangel (Meves), from the Ob (Finsch); and their number will assuredly increase every year.

Though, as yet, we are far from having obtained exhaustive observations, it would seem a fact that throughout the Eastern Arctic region the inner spot is wholly or in part suppressed oftener than is the case in the southern districts. This characteristic tendency increases with the distance east; in Eastern Asia the transition is probably imperceptible to the form which, under the name of *L. borealis*, we know from North America* (an exceptional approximation to this form occurs even in Western or Central Europe). In like manner does the transition proceed to other forms in which the white colour predominates, viz., throughout Southern Europe, North Africa, and East Asia.

Hence we must infer that *L. excubitor* (like *L. ludovicianus*, and other species of the same genus, if in a less degree) has a remarkable tendency to variation, more especially as regards the extent of the white colour on the tail-feathers and on the bases of the secondaries, as also in the development of the vermiculations across the abdomen. This variation occurs in some cases quite individually, in others more constantly, a definite kind of variation being exhibited with greater and greater frequency according as the distance from the region constituting the habitat of the typical form increases, till a number of more or less constant races, known to us under various names, at length are produced.

To enumerate all these varieties, or "species," derived from *L. excubitor*, does not come within the object of the present paper. In conclusion, I shall merely enumerate such of the forms as are found with greatest frequency in the tracts of the Palæarctic Region.

1. The typical form (*L. excubitor*, forma *excubitor*), with its fully and normally developed inner spot on the secondaries, inhabits chiefly Central and Western Europe, and produces normally young which, even in the nesting-plumage, exhibit this mark in full development, as in the old birds.

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* "My immature bird from the Amoor is undistinguishable from *L. borealis*, Vieill., but I have seen an almost complete series from it to *L. excubitor*" (Seebohm, Ibis, 1880, p. 115).

2. Sometimes, however, among the normally coloured young are produced a few having the basal spot on the secondaries either imperfect or wholly wanting, and every conceivable transition between this and the typical form.

3. Such individuals, with the basal spot on the secondaries either imperfect or wanting, become more common throughout the Arctic region; and in Northern Asia these are the normal (*L. excubitor,* forma *major*), while the double-spotted variety occurs comparatively seldom.

4. At the same time that the basal spot on the secondaries is either in part or wholly suppressed, some individuals have a tendency to exhibit a buff colouring on the rump and tail-coverts (*L. excubitor,* forma *mollis*), also more distinct and permanent vermiculations across the abdomen, till in North America (*L. excubitor,* forma *borealis*) this character becomes normal.

5. Moreover the typical *L. excubitor* sometimes, too, produces individuals having the basal spot on the secondaries larger than in the typical form, while at the same time the white colour becomes more expanded on the feathers of the rump and the outermost rectrices (*L. excubitor,* forma *homeyeri*).

6. Such individuals, occasionally produced also in Northern Europe, become more frequent further south, till in South-eastern Europe they are normal.

7. This tendency to develop the white colour increases with the distance east, till the most pronounced form (*L. excubitor,* forma *leucopterus*) meets in South Siberia the northern and darker forms of the species mentioned above.

8. Assuming the observations from these districts to be trustworthy, the last form keeps throughout that region (Seebohm, 'Siberia in Asia,' p. 243) distinctly different from the others.

Christiania, 30th Nov., 1885.

VII.—*On the Species of the Genus* Plotus *and their Distribution.* By H. B. Tristram, D.D., F.R.S.

(Plate III.)

There are few groups in ornithology more distinct than the subfamily Plotinæ—so sharply marked that not an aberrant Cormorant on the one side, or Tropic-bird on the other, has ever been suspected of balancing itself on the boundary-fence. Yet even this self-contained group has not escaped the fate of all others, of being subdivided into baseless species. The genus *Plotus* is usually held to contain four species:—

(1) *P. anhinga*, L., extending through the temperate and tropical regions of the whole New World.

(2) *P. levaillanti*, Licht., hitherto supposed to be confined to Southern, Western, and Central Africa.

(3) *P. melanogaster*, Gm., inhabiting the whole Indian region and Madagascar.

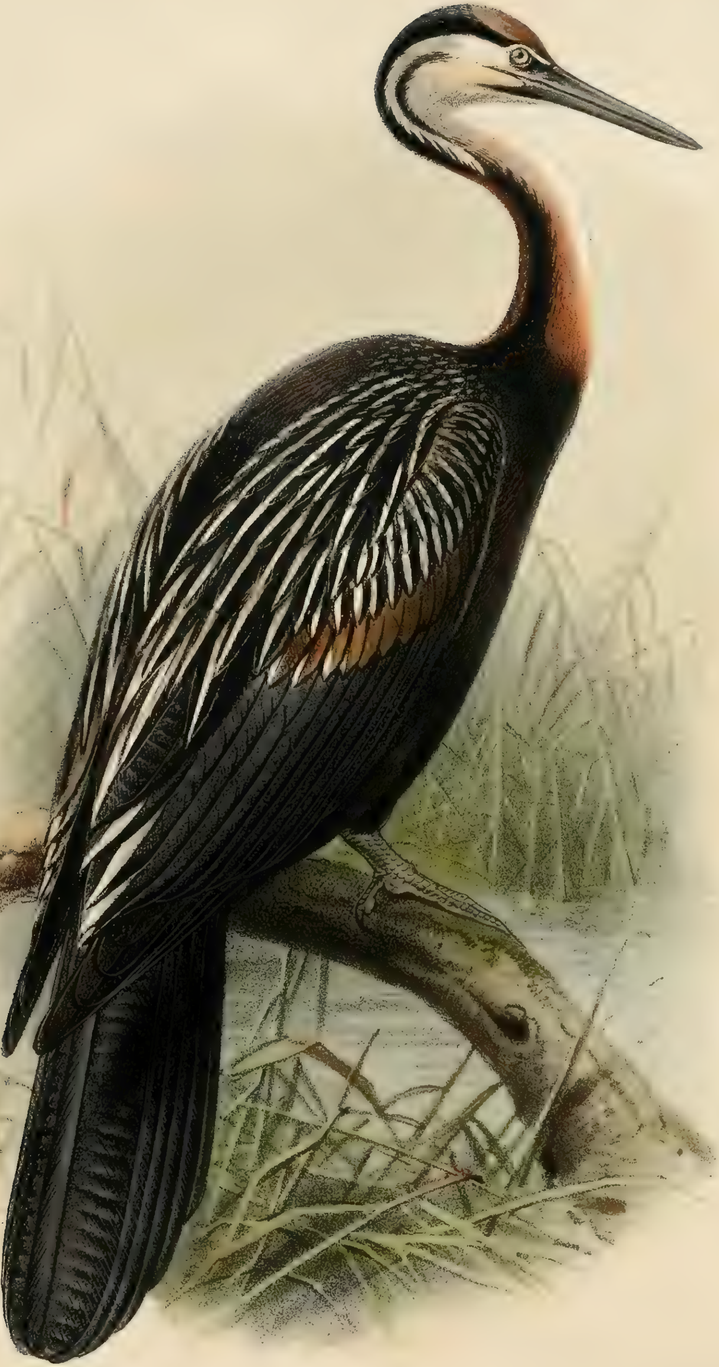
(4) *P. novæ-hollandiæ*, Gould, from Australia.

It is difficult, from the specimens in the British Museum, to distinguish this last bird from *P. melanogaster*. Gould, in his description, gives as the diagnosis of the species (P. Z. S. 1847, p. 34)—"Very closely allied to the *Plotus* inhabiting Java, but distinguished from it by the shortness of the scapularies and by its larger size." On examining the series in the Museum, I do not find any such constant differences. The largest Chinese specimen equals the smallest Australian in both respects. I am inclined to agree with Schlegel (Mus. des Pays-Bas) in specifically uniting the Australian with the Indian bird.

During my journey through Northern Syria in 1881, it was my good fortune to discover a colony of *Plotus* breeding in the Bahr el Abiad, or Lake of Antioch. I brought this fact before the notice of the Zoological Society, and exhibited a male specimen in full breeding-plumage and the eggs obtained by me (P. Z. S. 1881, p. 826), identifying the bird with the African *P. levaillanti*, and not with the Indian species. I gave a further description of this colony in 'The Ibis' (1882, p. 418).

M. Oustalet, in reviewing the collections made in the same region by M. Chantre (Ann. Sc. Nat. July 1882, art. 7), describes the Antioch *Plotus* as a new species, under the name of *P. chantrei*, and states that he differs from my conclusions, asserting also that the Antioch bird has its affinities rather with the Indian than with the African species. I was not a little surprised at this expression of opinion, and also at the omission by M. Oustalet of the one permanent character which in all stages of plumage distinguishes the African from the Indian bird, viz. the grey or rusty-brown band at the termination of the primary wing-coverts, which forms a conspicuous terminal bar on the wing. This is admirably shown by Temminck (Pl. Col. 380); but Schlegel (Mus. des Pays-Bas) is the only writer who, so far as I can ascertain, has drawn attention to this as the one true specific distinction. In all the Indian and Australian birds there is not the slightest trace of this russet band, the whole wing being a rich glossy black. The three points given in his diagnosis by M. Oustalet to distinguish this new species are:—1st. The silky-white markings of the feathers on the side of the neck, and the white periophthalmic line reaching to the forehead. But both these characters are found in *P. levaillanti* in breeding-plumage, and are well shown in Temminck's plate. 2nd. The front of the neck white, hardly tinted with yellow. This, again, is the character of the African bird in nuptial dress. 3rd. The silvery markings on the wings and back being thicker and broader. This also varies with age, sex, and season in both species. I have examined over sixty specimens in the British Museum, and compared them with my Antioch skin, and have come to the decided conclusion that the Antioch bird is simply *P. levaillanti* in full nuptial dress. In this I am confirmed by Mr. Sharpe, who kindly examined the series with me. It is very difficult to find two specimens in exactly identical plumage, and there is not one in the large Museum series in such absolutely perfect nuptial dress as my bird.

I should have added that, besides the russet or brown wing-bar, the African and Syrian species has also the inner



Keulemans lith.

web of the broad scapular feather of the same russet or rich brown colour in all stages of plumage, whereas in the Indian species this mark is replaced by a white stripe.

I have only, therefore, to reaffirm the identity of the Syrian with the African species, feeling satisfied that M. Oustalet, when he wrote his article, had not seen a fully adult male of *P. levaillanti* in breeding-dress.

The figure of this bird (Plate III.) is taken from my Syrian specimen, an adult in full breeding-plumage.

VIII.—*On the Wren of St. Kilda.*

By H. E. Dresser, F.Z.S.

When Mr. Seebohm last year (Zoologist, 1884, p. 333) described the St. Kilda Wren as distinct from *Troglodytes parvulus*, naming it *Troglodytes hirtensis*, he showed me the specimen from which his description was taken, and I then said that it differed so little from our English bird that I would prefer to reserve my opinion as to the validity of the species until I could examine a larger series. Since then Mr. Seebohm has received five more examples from St. Kilda through Mr. J. T. Mackenzie, of Dunvegan, Skye, one of which he has most courteously given to me, and has permitted me to examine the rest: I am also indebted to Mr. Mackenzie himself for one specimen. These birds I have carefully compared with my series of *Troglodytes parvulus*, and am now able to say that I do not consider the St. Kilda bird worthy of specific rank.

Compared only with specimens obtained in England and Scotland, the St. Kilda Wren is rather more distinctly barred on the back, and has the throat and breast whiter and less marked; but I have now before me a specimen from Margaard, Denmark, which has the back distinctly barred; as also one from Piedmont, which is, if anything, more distinctly barred, and has the throat and breast dull white, without any traces of spots. One, again, obtained near Constantinople, on the Asia Minor side of the Bosphorus, is more distinctly barred on the back than the St. Kilda bird, and has the throat and breast quite white, without any trace of spots; in fact, it agrees very closely with examples from St. Kilda, except that it is more rufous in tinge of colour. I do not find any difference between the bill of the St. Kilda Wren and that of typical examples from Europe; and I cannot agree with Mr. Dixon (Ibis, 1885, p. 81) in his statement that the bill of the former resembles that of *Troglodytes borealis,* inasmuch as *T. borealis* has a much larger and conspicuously stouter bill. All the last-received specimens of the St. Kilda Wren are conspicuously pale and grey in tinge of colour; but this is easily accounted for by the fact that they were all sent in spirits, and it is well known that birds thus treated become paler in colour, and that any tinge of rufous in the plumage is most apt to suffer. In point of fact, the type specimen of so-called *Troglodytes hirtensis* is considerably more rufescent than the last spirit-preserved examples received from there, and is about the same in tinge of colour as the specimen from Asia Minor above referred to.

In size the St. Kilda Wren agrees closely with examples from different parts of Europe, except that it has the wing and tarsus a trifle longer, as will be seen by the following table of measurements, all the specimens being males:—

	Culmen.	Wing.	Tail.	Tarsus.	Hind toe without claw.
	in.	in.	in.	in.	in.
England	0·55	1·95	1·35	0·75	0·35
Ditto	0·55	1·92	1·35	0·70	0·33
Piedmont	0·52	1·90	1·35	0·68	0·33
Macedonia	0·55	1·90	1·40	0·70	0·32
Asia Minor	0·55	1·90	1·35	0·75	0·33
Palestine	0·65	1·95	1·45	0·75	0·33
Central Asia	0·55	2·00	1·40	0·75	0·33
St. Kilda	0·55	2·10	1·50	0·75	0·33
Ditto	0·55	2·05	1·55	0·78	0·33

The Faröese Wren (*Troglodytes borealis*) differs from *Troglodytes parvulus* in having the underparts more strongly barred, in being darker in colour, and especially in being somewhat larger in size, and in having a much stouter bill and legs, and in these respects it also differs from the St. Kilda Wren. Two males of *Troglodytes borealis* which I have examined measured as follows:—culmen 0·65 and 0·63 inch, wing 2·1 and 2·05, tail 1·5 and 1·52, tarsus 0·88 and 0·9, middle toe without claw 0·45 and 0·43. Perhaps one of the most striking characteristics of the northern Wren is the stoutness of its bill, for the two specimens above cited measure in width at the base of the bill 0·28 and 0·3 respectively, whereas no specimen of *Troglodytes parvulus* which I have examined measures more than 0·15, the average being about 0·14, and the two examples from St. Kilda measure 0·14 and 0·15 respectively. I have, as will be seen, taken the measurements of the hind toe of the various specimens *without* the claw, as in some of them the claw is somewhat worn, and hence, had I taken the measurements with the claw, it would not have given so accurate a result.

IX.—*Notes from Northern Iceland in the Summer of* 1885.

By Henry H. Slater and Thomas Carter.

We started late on our tour to Iceland last summer, and were rather afraid, on landing at Sapiðarkrokr, June 22nd, that we might find the breeding-season of most of the birds far advanced. The season, however, was such an exceptionally late one, owing to the enormous amount of snow still remaining, even at low altitudes, and to the presence of numerous icebergs a little to the north of the island, that the birds seemed to be in a state of complete uncertainty. Up to the time of our leaving the island on July 20th, we appeared equally likely to meet with any given species (Ravens and Iceland Falcons excepted) with young birds, with eggs in any stage, or not yet breeding.

It was unfortunately often the case, however (doubtless a common experience), that any bird's eggs which we particularly wanted proved to be much incubated. This caused us, in moments of irritation, as we sat late into the night painfully extracting chickens in small pieces, to vow that in Iceland birds laid their eggs "hard sat."

We do not feel called upon to be too precise as to localities, but we shall always be ready to furnish information to brother ornithologists by letter. We may be pardoned for taking this course, as one of us has reason to believe that he has already, unwittingly, done harm in being too confidential. The year after he had published his experiences on the Dovre Fjeld, he received a letter from Mr. Collett, which mentioned that an English collector had just visited the same localities and had simply exterminated the rarer birds.

REDWING. (*Turdus iliacus.*)

Abundant in the birch woods. We found only one nest with eggs, on June 27. We saw many young birds the same day, some just fledged, some full-grown and almost as long-tailed as their parents. Whenever the sun shone we heard with great pleasure the rich wild note of this bird all over the birch woods.

NORTHERN WREN. (*Troglodytes borealis.*)

Mr. W. E. Clarke (Ibis, 1885, p. 376) states that this bird "occurs in the brushwood of the Fnjoská." We can only say that for some days we searched this locality most carefully for it and for its nest, but entirely without success. Nor can we think that we overlooked it. The inhabitants, most of whom seem to have a fair general knowledge of their local birds, usually appeared to know of the bird by the name "Musarbroðir," but no one seemed to have seen the bird itself, or could tell us where to look for it. Considering the trouble we took to find it in different places, considering, too, the very small number and limited area of the woods in which it would most probably occur, we feel justified in putting it down as, at all events, extremely rare in the north; for it is not, like one of the rarer Waders, for example, a bird which might be easily overlooked in the vast stretches of likely marsh and "heiði" ground.

MEALY REDPOLL. (*Linota linaria.*)

We found this bird often very abundant, as well as generally distributed, in the birch woods. It seems to be the opinion of modern ornithologists that *L. hornemanni*, Holb., is the ordinary Redpoll of Iceland. Herr Preyer, both in 'Naumannia' (1857, i. p. 63) and 'Reise nach Island im Sommer 1860." (p. 394), speaks of it as "*Fringilla linaria*, L." Professor Newton does the same (App. to Baring Gould's 'Iceland, its Scenes and Sagas,' 1863), which are all subsequent to Holböll's article in 'Naturh. Tidsskr.' (iv. p. 398, 1843). But in the last edition of Yarrell's 'British Birds,' Professor Newton conjectures that the prevailing form in Iceland is the Arctic Redpoll (*L. hornemanni*), and Mr. Dresser (B. of Eur. iv. p. 42) acquiesces in this view, which is based upon an unquestionable specimen from Iceland in Mr. Hancock's possession. We think, however, that the subjoined measurements, to which are added those of one or two other examples in Slater's collection, will prove that the bird which *breeds* in Iceland is *L. linaria*, whilst it is probable that the Arctic Redpoll is only a winter visitor.

	Loc.	Coll.	Wing. in.	Tail. in.	Tarsus. in.
A. ♂	N. Iceland.	H. H. S.	2·97	2·25	0·55
B. ♂	"	"	3·00	2·40	0·56
C. ♀	"	"	2·90	2·33	0·50
D. ♂	"	T. C.	3·05	2·55	0·58
E. ♀	"	"	2·87	2·35	0·57
F. ♀	"	"	2·90	2·35	0·55
G. ♂	Vadsö.	R. Collett.	2·98	2·38	0·55
H. ♂	Spurn Pt.	H. H. S.	2·95	2·50	0·55
I. ♂	"	"	2·95	2·40	0·54
K. ♂	"	"	2·98	2·55	0·59
L. ♂	"	"	2·80	2·25	0·52
M. ♀	"	"	2·82	2·60	0·54
Mr. Hancock's Iceland Arctic Redpoll ..			3·125	..	0·75

SNOW-BUNTING. (*Plectrophanes nivalis.*)

Common. We obtained several nests with eggs. The nest, placed either in a crevice of rock in some wild ravine near the snow-line, or in a heap of loose stones, is clumsily made of short sticks and tufts of wool, and is lined, like nearly all small birds' nests in Iceland, with white Ptarmigan feathers. We obtained, about the same time, young flyers in a very interesting stage of plumage, which has been described by Professor Newton in 'Yarrell,' ed. 4, vol. ii., but, so far as we know, nowhere figured.

RAVEN. (*Corvus corax.*)

We were, of course, too late for the eggs of this bird, but we took young birds, almost fledged, from a nest on June 30; they were four in number, and had been fed on birds' eggs (mostly, apparently, those of the Whimbrel and Golden Plover) and berries, which, from their colour, could only have been those of *Empetrum*. Ravens seem to get a good many of the Ptarmigan's eggs; on two occasions we found one lying in the woods so neatly sucked as to make pretty good specimens. The Whimbrels used to attack the black robbers fearlessly when they came near their nests, as Peewits do Rooks at home. As there is a much greater disparity in size in the former case, and, apparently, a less effective weapon (for it is difficult to imagine a more incapable instrument than the Whimbrel's bill, from a warlike point of view), this speaks volumes for the pluck of the Whimbrel. As long as the Raven kept on the ground, the Whimbrels did the same. But as soon as we approached the Raven and it occurred to him that he had better move, the Whimbrels dashed at him as soon as he was on the wing, and appeared almost to tumble him over, and he soon was glad to take to earth again in a most undignified manner. Then the Whimbrels, after a stoop or two at his head, which he met by ducking and croaking, perched on hummocks and watched him as before. This seemed to be the usual procedure; but the Raven appeared to be ready to put up with the kicks as long as he got the halfpence—to wit, the eggs. Amongst the scores of Ravens we saw, we did not observe a single pied specimen.

WHITE-TAILED EAGLE. (*Haliaëtus albicilla.*)

An egg of the season was brought in to us.

ICELAND FALCON. (*Hierofalco islandus.*)

We saw several, and eggs which had been taken earlier were brought to us.

Merlin. (*Falco æsalon.*)

Not nearly so numerous in the north as would seem to be the case elsewhere. We never saw the adult birds, but two clutches of eggs and four young in down were brought to us.

Rock-Ptarmigan. (*Lagopus rupestris.*)

Of this bird, which seems generally distributed in fair numbers, we obtained specimens—adult, young in down, and eggs. We must entirely endorse the remarks of Messrs. Clarke and Backhouse (Ibis, 1885, p. 376), as all the specimens which came under our notice were normal *L. rupestris*. The note is a croak, very like that of *L. alpinus*, which the male utters continuously on the wing, as well as intermittently when on the ground; and this several times drew our attention to him when he might otherwise have escaped notice. The nest is like that of the Red Grouse, partly sheltered by a trailing branch of dwarf birch or other shrub. The largest clutch of eggs we obtained was ten, but one of six was brought to us on July 6, very much incubated.

Heron. (*Ardea cinerea.*)

We saw one near Skagafjörðr.

Ducks.

Of these we took eggs ourselves of the Wild Duck, Wigeon, Scaup (commonest of all; we once, working independently, counted 305 nests of this bird in about an hour on a space of three or four acres, all with eggs, after which we stopped counting), Barrow's Goldeneye, Longtail, Pintail, Scoter; also of the Merganser. One of us is confident also that he saw a pair of Common Goldeneyes near Skagafjörðr, which were swimming in a lake within thirty yards of where he rode past them. Other Ducks' eggs were brought to us with the down, amongst which, with the kind help of Mr. Seebohm and his collection, we have identified the Teal, possibly the Shoveller, the Harlequin, and three eggs of the Gadwall, which have only once previously been taken in North Iceland.

Turnstone. (*Strepsilas interpres.*)

We never met with this bird ourselves, but an Icelander brought in a clutch of eggs which we put down as belonging to this bird, an opinion which Professor Newton endorses.

Purple Sandpiper. (*Tringa striata.*)

We obtained two clutches of the eggs of this bird, which would seem to breed sparsely on the bleakest and wildest uplands or "heiðies."

Sanderling. (*Calidris arenaria.*)

An officious native having, at considerable trouble to himself, informed the authorities that we were shooting birds in the close season (a fact of which they were already quite aware), they felt themselves compelled to send us a messenger with a copy of the law on the subject, as a delicate hint to keep our proceedings quiet. This law, it is perhaps worthy of remark, is printed in Danish and *French,* although nine tenths of the tourists in Iceland are British. The great offenders, owing to whom it originally became necessary to pass the law, are the officers of the various French men-of-war sent there to protect the interest of the bonus-fed French cod-fishermen. These gentry were, and still are, in the habit of going ashore in boatloads, and slaying, no matter at what season, everything they find with feathers on it.

In consequence of this message from the authorities, we went out for a day or two without guns, and of course one of them proved to be the one day, of all others, when a gun would have been invaluable. For we came upon a nest that day, on a tussock-side at the edge of a marsh, from which the old bird fluttered off in a perfectly different manner from a Dunlin; this, combined with the appearance of the bird, impelled the finder to drop his hat on the nest to mark it, and to follow the old bird, which trotted or crept away, according to the openness of the ground, without uttering a sound, a few yards in front of him. He followed her for about a hundred yards, keeping his field-glasses focused upon her, and then returned to the nest, perfectly convinced that he had been looking at a Sanderling. He was chiefly struck with the rusty colour of her throat, with the plain white breast, and with her perfect muteness. The eggs were packed with great care (they were, of course, on the point of hatching), and seemed to resemble what we remembered Sanderling's eggs to be. On our return to England we again inspected the plate in Nares's 'Narrative,' and sent them off to Professor Newton, who expressed his opinion that they were possibly Sanderling's eggs. When dissected, however, the embryo proved to have a hind toe. Notwithstanding this, we feel it difficult to alter our opinion as to the species. As the Sanderling, hind toe excepted, is a normal *Tringa,* it seems to us not impossible that the hind toe may become atrophied shortly after hatching. We propose to investigate the subject further, if possible.

ARCTIC TERN. (*Sterna macrura.*)

Universally distributed in large numbers. The native Icelandic names for the birds are generally onomatopœic, and that of the Arctic Tern is "Krja" (pronounced *kreēē-ăh*), which exactly suggests the note; this is more than can be said for most of the complicated arrangements in italics so common in books on birds. The Terns in Iceland were excessively bold, and, when we were near their eggs or young, gave us vicious raps on the head, which, through our soft hats, were distinctly painful. A large proportion of the young birds seemed to die in the downy stage some little time after hatching, for which we could only account by attributing it to the cold summer, or to the presence of huge tapeworms in their insides.

GREAT NORTHERN DIVER. (*Colymbus arcticus.*)

Opinions differ as to the disposition of this bird. It is not unfrequently stated to be so very wary that it is only with the greatest difficulty that it can be approached in a boat. Mr. Charles Dixon, apparently (Ibis, 1885, p. 90), considers that it is of so guileless a disposition as to sit on a rock while St.-Kildans, taking it, in a moment of universal temporary insanity, for an evil spirit, stone it to death.

Its disposition appears to lie somewhere between these extremes, but probably a good deal nearer to the former. We were able one morning to obtain a couple (both males, which weighed, respectively, 10½ and 13 lb.) by noting the direction in which they dived and proceeding in it. Five times out of ten you will be disappointed, as the bird will alter its course under water, or do something else unexpected. The tenth, if you are very quick with your gun, you may get a snap-shot before it dives again. Our morning's amusement was only marred by a big trout choosing an inopportune moment, when we were intently looking out for the reappearance of a submerged Diver, to seize an angel-minnow trailing behind the boat. Before the gun could be transferred to the person who was rowing, and the rod taken in hand, the reel-handle had caught in some stones at the boat's bottom, there were two frantic jumps in the air, and we were minus our hoped-for dinner and a certain quantity of tackle.

RED-THROATED DIVER. (*Colymbus septentrionalis.*)
Much less common than the foregoing. We saw the bird on one or two occasions, heard it oftener, and had several eggs brought in.

LITTLE AUK. (*Mergulus alle.*)
Were not uncommon on Skagafjörðr, and we had eggs brought in from Grimsey.

Other birds, observed in more or less abundance, which call for no remark, are :—Wheatear, White Wagtail, Meadow-Pipit, Whimbrel, Golden Plover, Dunlin, Redshank, Snipe (Common only), Red-necked Phalarope, Ringed Plover, Geese, Harlequin and Eider Ducks, Goosander, Puffin, Razorbill, Black, Brünnich's, and Common Guillemots, Shag, Gannet, Kittiwake, Glaucous Gull, Great Black-backed Gull, Richardson's and Great Skuas, Fulmar, and Sclavonian Grebe.

Skins of the Coot and the Water-Rail were seen at Akureyri : they were stated to have been killed on the Eyja- or Œfjörðr, on which the town stands.

X.—*On some interesting Additions to the Avifauna of Bucaramanga, U.S. of Colombia.* By Hans von Berlepsch.

(Plate IV.)

In the 'Journal für Ornithologie' for 1884, pp. 273–320, I have spoken of a large collection of bird-skins from Bucaramanga sent to the Lübeck Museum by Mr. Emilio Minlos, a German resident of that city. Lately I have had the pleasure of examining another collection from the same source, which was most obligingly placed in my hands for determination by my friend Dr. H. Lenz, of Lübeck. In general this second collection contained but little additional material worthy of notice; indeed, it furnished but three species which were not represented in the first consignment. However, two of these are of no small interest: one being quite new to science, the other not yet known as a denizen of New Granada. To begin first with the interesting novelty, of which there are two specimens in the collection. I feel much satisfaction in naming it "*Xenerpestes minlosi*," in honour of Mr. Emilio Minlos, by whose generosity this collection was brought together in the neighbourhood of the city of Bucaramanga, and afterwards presented to the Museum of the city of Lübeck. The new generic title was kindly suggested to me by Mr. Sclater, who, as well as Mr. Salvin, agrees with me in considering this bird to be new to science, and a very important discovery.

In appearance *Xenerpestes minlosi* is quite unlike any other species. At first sight its colouring reminds one somewhat of the curious *Odontorhynchus branickii*, being cinereous above, white below, and showing white striations on the nape &c. In form, however, it is altogether different; moreover it has an unbarred tail, white wing-bands &c., and the similarity appears very superficial when the two species are compared more closely together.

The correct position of the new bird is, no doubt, among the Dendrocolaptidæ; and I am inclined to adopt the view of my friend Mr. Sclater, who believes that it ought to be placed in the neighbourhood of *Synallaxis*. Nevertheless its comparatively much longer wings, which are more pointed (not rounded), its tail, the feathers of which are soft, with their tips rounded (not pointed, nor are the rectrices anywhere dilated, as in certain Dendrocolaptidæ with soft tails), the curved bill, the very short legs, with their strong much-curved claws, and the quite singular coloration make it very different from that genus, and its correct position among the Dendrocolaptidæ must remain a matter of controversy. The bird may be characterized as follows :—

Xenerpestes (*ξένος*=alienus, *ἑρπηστής*, nomen propr.), genus novum Dendrocolaptidarum.

Rostro brevi, gracili, conspicue deorsum curvato, basi latiore, dein subito angustato, maxillæ tomiis ad oris angulum projectis, tumidis, dente finali nullo. Narium aperturis oblongis, pone rostri basin, lateralibus, membrana partim obtectis nec plumosis. Tarsis brevibus fortibus, digitis brevissimis, unguibus fortioribus, valde incurvis instructis. Digito externo interno vix longiore.

Trunci pennis quam in genere *Synallaxidi* firmioribus, plumis in fronte rigidis setaceis, supra narium aperturas valde prominentibus.

Alis pro mole longioribus. Remigum primariorum decem 2°, 3°, 4° longissimis, fere æqualibus ; 2°=7° secundariis (numero novem ?) multo longioribus.

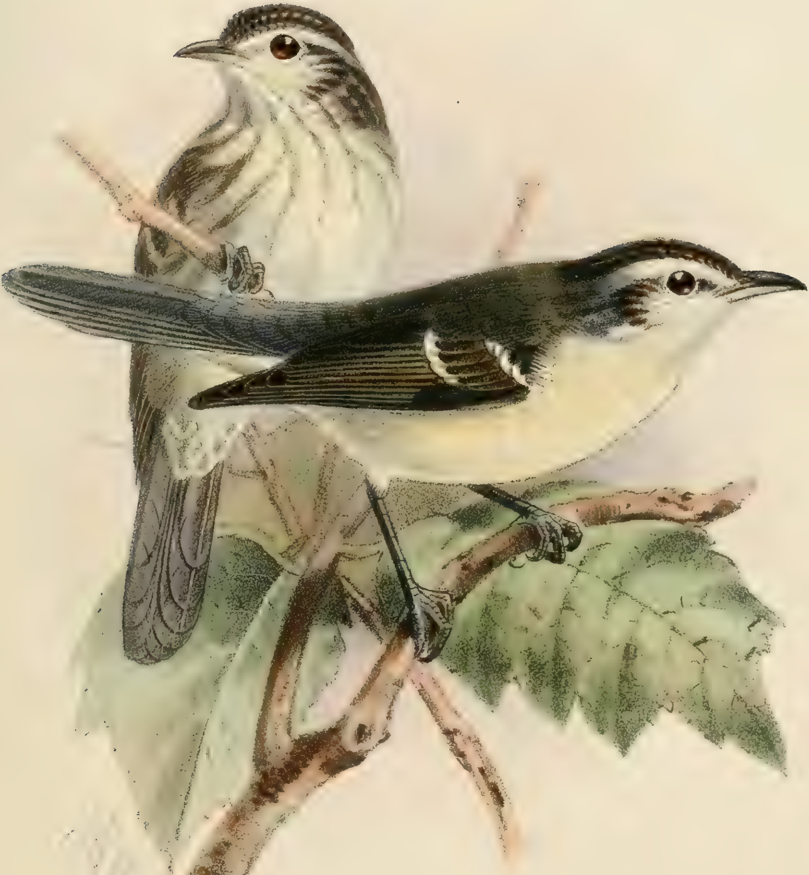
Cauda modice gradata, rectricibus externis mediis circiter 15 mm. brevioribus : rectricibus omnibus laxis, latitudine æquali, apicibus rotundatis nec acuminatis.

Coloribus insolitis, sexibus similibus : ptilosi ætatis juvenilis diversa.

Xenerpestes minlosi, sp. nov. (Plate IV.)

Corpore supra olivascente griseo, pileo nigrescentiore, plumis in fronte striis tenuissimis scapalibus albis signatis. Nucha et collo laterali minus conspicue striatis. Superciliis latis a naribus ad nucham ductis flavescenti-albis. Corpore subtus sordide flavescenti-albo unicolore, subcaudalibus obscure griseo maculatis. Tectricium alarum mediorum et longissimorum apicibus late albo maculatis (itaque alis bifasciatis). Rectricibus colore dorsi, externis in vexillo interno stricte albo marginatis. Rostro corneo, mandibula basi infra flavescenti-alba. Pedibus plumbeis, unguibus flavescentibus.

Ibis 1886 Pl. IV



J. Keulemans lith. Hanhart imp.

XENERPESTES MINLOSI.

Avis junior. Plumis pectoralibus fusco marginatis, nucha fortius albo striata, striis frontalibus fere evanescentibus, alarum tectricibus sordidis albo fasciatis et limbo rectricium lateralium albo nullo differt.

Long. tot. 100 (circiter), al. 57–56, caud. 47½–48½, rostr. culm. 11½, tars. 14½ mm.

Habitat. Circa Bucaramanga, in republ. Colombiana (coll. Minlos).

Typi in Mus. Lübeck et Hans von Berlepsch.

I add a more detailed description of the two specimens which are in the collection—one of them being evidently an adult; the other a young bird, which differs in many points from it.

Adult. The upper parts of the body are of a dark cinereous colour, with a slight shade of olive admixed with it. The top of the head is much darker, rather blackish, and here each feather shows a thin white stripe occupying the shaft from the base till about the end of the feather; these stripes are more conspicuous on the fore part of the front, where the feathers are rather firm and rigid and acutely pointed. On the hind neck, and more so on the sides of the neck, there are likewise indications of white stripes down the feathers, but they are only to be seen when the feathers are disturbed. The lores are white, but obscured by blackish margins to the feathers, which also form a black line dividing the lores from the superciliary stripe. The white superciliary stripe itself, which is very broad and conspicuous, begins at the nostrils, where it has a strong yellowish or fulvous suffusion, and then becoming of a purer white, extends over the eye to the side of the nape, where it ends in an acute tip. The feathers of the region under the eye are whitish, with blackish tips; the ear-coverts blackish, striped down the centre with whitish.

All the underparts are of a uniform soiled white, somewhat suffused with yellowish. On the sides of the breast there are a few indistinct blackish spots, being, no doubt, the remains of a feature which is much more conspicuous in the immature stage of this bird.

The under wing-coverts, the carpal margin, and the inner margin of the wing-feathers are also a uniform yellowish white. The flanks are greyish olivaceous, variegated with whitish, and on the inner flanks under the wing there is a bundle of silky-white feathers of a fluffy appearance. The under tail-coverts are yellowish white, marked with indistinct dusky spots on each side of the feather.

The wings are a blackish brown, with very indistinct margins of greyish olive to the secondaries and the middle portion of the outer webs of the primaries. The smallest wing-coverts are dark brown, margined with the colour of the back, the medium-sized and the longest coverts more blackish brown, tipped broadly and distinctly with white spots (these forming two conspicuous and well-marked white wing-bands). The least tertiaries also show inconspicuous narrow white margins to their tips behind.

The tail-feathers are of the same cinereous colour as the back, with blackish shafts. The three outer rectrices on each side show sharp and conspicuous white margins to the inner webs from nearly the base to the tip. Upper mandible blackish brown; the under mandible whitish, obscured with brownish on the side of the base and on the tip. Legs blackish plumbeous, claws clear yellowish white.

The *young* bird differs from the old one in having all the feathers of the breast down nearly to the belly and of the jugulum margined with greyish black; these margins are more conspicuous on the sides of the feather than on the tip, but give to these parts of the body a somewhat scaly appearance. The white superciliary stripe is not nearly so broad as in the old bird, and much obscured by blackish margins to the feathers. The feathers on the forehead show somewhat lighter centres, but there are no linear shaft-stripes; these feathers are also not nearly so stiff and pointed as in the adult.

On the neck and upper part of the back the white striations are much more conspicuous, being broader and more generally dispersed. The white wing-bands are not so conspicuous, being narrower and more soiled with rusty yellowish. The conspicuous white margins to the inner webs of the tail-feathers are altogether wanting.

The second addition to the Colombian avifauna is a specimen of *Oncostoma olivaceum,* Lawr. The genus *Oncostoma* has hitherto been believed to be confined to Central America; the discovery of *O. olivaceum* at Bucaramanga therefore is a fact of considerable interest. The skin sent from Bucaramanga differs a little from a typical specimen of *O. olivaceum* kindly lent to me for comparison by Mr. Sclater. The former is of much larger dimensions and has a somewhat narrower bill; the upper parts of the body are of a darker olivaceous, especially on the top of the head, where the dark basal markings of the feathers are more apparent. Further, the upper breast is more conspicuously striated with dusky, and the yellowish wing-bands (formed by the terminal spots of the larger and middle wing-coverts) are much clearer and broader.; the legs, too, are darker.

Knowing that similar differences in size and colour are to be found in specimens of the allied *O. cinereigulare,* I do not think the specimen from Bucaramanga ought to be separated specifically or subspecifically from true *O. olivaceum.* A larger series is necessary to settle this point definitely.

O. olivaceum from Panama (mus. P. L. Sclater): al. 41½ millim., caud. 30, rostr. 11½, tars. 14½.

O. olivaceum from Bucaramanga: al. 49 millim., caud. 38½, rostr. 12¼, tars. 14.

The third addition to the avifauna of Bucaramanga is a young male in transition plumage of *Euphonia nigricollis* (Vieill.), about which no remark is needed.

Muenden, November 1885.

XI.—*A List of the Birds obtained by Mr. Henry Whitely in British Guiana.* By Osbert Salvin, M.A., F.R.S., &c.

[Continued from 'The Ibis,' 1885, p. 439.]

380. Picumnus minutus.

Pipra minuta, Linn. Syst. Nat. i. p. 340?

Picumnus minutus, Cab. in Schomb. Guiana, iii. p. 714.

Camacusa, Merumé Mountains, Roraima (3500–4000 ft.).

Mr. Whitely's skins no doubt belong to the species thus named by Prof. Cabanis; but whether they should be referred to the *Pipra minuta* of Linnæus must probably be ever a matter of uncertainty.

381. CAMPEPHILUS MELANOLEUCUS.

Picus melanoleucus, Gm. Syst. Nat. i. p. 426; Sundev. Consp. Av. Picin. p. 5.

Dryocopus albirostris (Vieill.), Cab. in Schomb. Guiana, iii. p. 716.

Bartica Grove.

382. CAMPEPHILUS RUBRICOLLIS.

Picus rubricollis, Gm. Syst. Nat. i. p. 426.

Campephilus rubricollis, Cab. in Schomb. Guiana, iii. p. 716.

Bartica Grove, Camacusa, Merumé Mountains.

383. DRYOCOPUS LINEATUS.

Picus lineatus, Linn. Syst. Nat. i. p. 174.

Dryocopus lineatus, Cab. in Schomb. Guiana, iii. p. 716.

Bartica Grove, Camacusa, Roraima (3500 ft.).

384*. CHLORONERPES SANGUINEUS.

Dendrobates sanguineus (Wagl.), Cab. in Schomb. Guiana, iii. p. 716.

Not represented in Mr. Whitely's collection.

385. CHLORONERPES KIRKII.

Chloropicus kirki, Malh. Rev. Zool. 1845, p. 400.

Mesopicus kirki, Malh. Mon. Pic. ii. p. 70, pl. 59. figs. 7, 8.

Roraima (4000–5000 ft.).

386. CHLORONERPES SEDULUS.

Campias sedulus, Cab. & Heine, Mus. Hein. iv. p. 153.

Bartica Grove, Camacusa, Merumé Mountains, Roraima.

Dendrobates passerinus (Linn.), Cab. in Schomb. Guiana, iii. p. 716, may refer to this species or to *C. tephrodops,* both being Guianan birds. *Picus passerinus,* Linn., from St. Domingo, has never been satisfactorily recognized.

387. CHLORONERPES FLAVIGULARIS.

Picus flavigula, Bodd. Tabl. Pl. Enl. p. 49.

Chloronerpes flavigularis, Scl. Cat. Am. B. p. 339.

Chloronerpes chlorocephalus (Gm.), Cab. in Schomb. Guiana, iii. p. 716.

Bartica Grove, Camacusa.

388. CHLORONERPES RUBIGINOSUS.

Picus rubiginosus, Sw. Zool. Ill. pl. 14.

Chloronerpes rubiginosus, Cab. in Schomb. Guiana, iii. p. 715.

Bartica Grove, Merumé Mountains, Roraima (3500 ft.).

These specimens agree with others from Venezuela, the true *P. rubiginosus* of Swainson.

389. MELANERPES RUBRIFRONS.

Picus rubrifrons, Spix, Av. Bras. i. p. 61, pl. 55.

Melanerpes rubrifrons, Scl. Cat. Am. B. p. 341.

Centurus hirundinaceus (Gm.), Cab. in Schomb. Guiana, iii. p. 341.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau.

390. CELEUS CINNAMOMEUS.

Celeus cinnamomeus (Gm.), Cab. in Schomb. Guiana, iii. p. 715.

Bartica Grove, Camacusa.

These specimens have the head of a rather deeper colour than is usual in this species; but they vary in this respect amongst one another.

391*. CELEUS CITRINUS.

Picus citrinus, Bodd. Tabl. Pl. Enl. p. 30.

Celeus exalbidus (Gm.), Cab. in Schomb. Guiana, iii. p. 715.

Not represented in Mr. Whitely's collection.

392. CELEUS RUFUS.

Celeus rufus (Gm.), Cab. in Schomb. Guiana, iii. p. 715.

Bartica Grove, Camacusa, Merumé Mountains.

393*. CELEUS MULTICOLOR.

Celeus multicolor (Gm.), Cab. in Schomb. Guiana, iii. p. 715.

Not represented in Mr. Whitely's collection.

394. MOMOTUS BRASILIENSIS.

Rhamphastus momotus, Linn. Syst. Nat. i. p. 152.

Momotus brasiliensis, Scl. Cat. Am. B. p. 216.

Prionites momota, Cab. in Schomb. Guiana, iii. p. 704.

Bartica Grove, Merumé Mountains, R. Atapurau, Roraima (3500 ft.).

395. CERYLE TORQUATA.

Alcedo torquata, Linn., Cab. in Schomb. Guiana, iii. p. 703.

Ceryle torquata, Sharpe, Mon. Alc. p. 73, pl. 22.

Camacusa, Merumé Mountains, R. Atapurau.

396. CERYLE AMAZONA.

Alcedo amazona, Lath., Cab. in Schomb. Guiana, iii. p. 704.

Ceryle amazona, Sharpe, Mon. Alc. p. 83, pl. 24.

Bartica Grove, Camacusa, Merumé Mountains.

397. CERYLE AMERICANA.

Alcedo americana, Gm., Cab. in Schomb. Guiana, iii. p. 704.

Ceryle americana, Sharpe, Mon. Alc. p. 89, pl. 26.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau, R. Surnani (2700 ft.).

398. CERYLE INDA.

Alcedo inda, Linn. Syst. Nat. i. p. 179.

Ceryle inda, Sharpe, Mon. Alc. p. 91, pl. 27.

Alcedo bicolor, Gm., Cab. in Schomb. Guiana, iii. p. 704.

Bartica Grove, Camacusa.

399. CERYLE SUPERCILIOSA.

Alcedo superciliosa, Linn., Cab. in Schomb. Guiana, iii. p. 704.

Ceryle superciliosa, Sharpe, Mon. Alc. p. 93, pl. 28.

Bartica Grove, Camacusa.

400. TROGON PERSONATUS.

Trogon personatus, Gould, Ann. & Mag. N. H. ix. p. 237; Mon. Trog. ed. 2, pl. 10.

Roraima (3500 ft.).

These specimens agree with others from the Andes (Colombia, Ecuador, &c.), except that the central tail-feathers of the males are of a deeper bronze colour than usual. In our series we observe a variation in these feathers from green to bronze, those of the former colour being apparently more freshly moulted.

401. TROGON ATRICOLLIS.

Trogon atricollis, Vieill., Cab. in Schomb. Guiana, iii. p. 719; Gould, Mon. Trog. ed. 2, pl. 14.

Bartica Grove, Camacusa, Merumé Mountains.

402. TROGON MERIDIONALIS.

Trogon meridionalis, Sw., Cab. in Schomb. Guiana, iii. p. 719; Gould, Mon. Trog. ed. 2, pl. 17.

Bartica Grove, Camacusa, R. Atapurau, Roraima (3500 ft.).

403. TROGON VIRIDIS.

Trogon viridis, Linn., Gould, Mon. Trog. ed. 2, pl. 21.

Trogon melanopterus, Sw., Cab. in Schomb. Guiana, iii. p. 718.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau.

404. TROGON MELANURUS.

Trogon melanurus, Sw., Cab. in Schomb. Guiana, iii. p. 718; Gould, Mon. Trog. ed. 2, pl. 29.

Bartica Grove, Camacusa, R. Atapurau.

405*. GALBULA VIRIDIS.

Galbula viridis, Scl. Mon. Galb. p. 7, pl. 2.

Galbula viridicauda, Sw., Cab. in Schomb. Guiana, iii. p. 717.

Not represented in Mr. Whitely's collection.

406*. GALBULA RUFICAUDA, Cuv. Règn. An. i. p. 420; Scl. Mon. Galb. p. 15, pl. 4.

Galbula leptura, Sw., Cab. in Schomb. Guiana, iii. p. 717.

Not represented in Mr. Whitely's collection.

407. GALBULA ALBIROSTRIS.

Galbula albirostris, Lath., Scl. Mon. Galb. p. 27, pl. 7.

Galbula flavirostris, Vieill., Cab. in Schomb. Guiana, iii. p. 717.

Bartica Grove, Camacusa, Merumé Mountains, Roraima (3500 ft.).

408. GALBULA LEUCOGASTRA.

Galbula leucogastra, Vieill., Scl. Mon. Galb. p. 33, pl. 9.

Galbula albiventris, Cuv., Cab. in Schomb. Guiana, iii. p. 717.

Merumé Mountains.

409. UROGALBA PARADISEA.

Alcedo paradisea, Linn. Syst. Nat. i. p. 181.

Galbula paradisea, Cab. in Schomb. Guiana, iii. p. 717.

Urogalba paradisea, Scl. Mon. Galb. p. 1, pl. 1. fig. 1.

Bartica Grove, Merumé Mountains.

410. BRACHYGALBA LUGUBRIS.

Galbula lugubris, Sw. An. in Menag. p. 329; Cab. in Schomb. Guiana, iii. p. 718; Scl. Mon. Galb. p. 39, pl. 11.

Merumé Mountains, Roraima.

411. JACAMEROPS GRANDIS.

Lamproptila grandis (Gm.), Cab. in Schomb. Guiana, iii. p. 718.

Jacamerops grandis, Scl. Mon. Galb. p. 57, pl. 18.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau.

412. BUCCO COLLARIS.

Bucco collaris, Lath. Ind. Orn. i. p. 202; Scl. Mon. Bucc. p. 59, pl. 19.

Bartica Grove, Camacusa, Merumé Mountains, Roraima (3500 ft.).

413. BUCCO MACRORHYNCHUS.

Bucco macrorhynchus, Gm., Cab. in Schomb. Guiana, iii. p. 719; Scl. Mon. Bucc. p. 65, pl. 20.

Camacusa, Merumé Mountains, Roraima (3500 ft.).

414. BUCCO TECTUS.

Bucco tectus, Bodd. Tabl. Pl. Enl. p. 43; Scl. Mon. Bucc. p. 79, pl. 26.

Bartica Grove, Camacusa, Merumé Mountains.

415. Bucco tamatia.

Bucco tamatia, Gm., Cab. in Schomb. Guiana, iii. p. 719; Scl. Mon. Bucc. p. 93, pl. 31. fig. 1.

Bartica Grove, Camacusa, Merumé Mountains.

416. Monasa atra.

Monasa nigra (Müll.), Scl. Mon. Bucc. p. 145, pl. 48.

Monasta tranquilla (Vieill.), Cab. in Schomb. Guiana, iii. p. 719.

Camacusa, Merumé Mountains, R. Atapurau.

417. Chelidoptera tenebrosa.

Chelidoptera tenebrosa (Pall.), Cab. in Schomb. Guiana, iii. p. 720; Scl. Mon. Bucc. p. 161, pl. 55. fig. 1.

Bartica Grove, Merumé Mountains, R. Yuruani, Roraima.

418. Crotophaga ani.

Crotophaga ani, Linn. Syst. Nat. i. p. 154; Cab. in Schomb. Guiana, iii. p. 713.

Bartica Grove.

419*. Crotophaga major.

Crotophaga major, Linn., Cab. in Schomb. Guiana, iii. p. 712.

Not represented in Mr. Whitely's collection.

420*. Crotophaga sulcirostris.

Crotophaga sulcirostris, Sw. Phil. Mag. new ser. i. p. 440.

Crotophaga rugirostra, Sw., Cab. in Schomb. Guiana, iii. p. 713.

Not represented in Mr. Whitely's collection.

421. Neomorphus rufipennis.

Cultrides rufipennis, G. R. Gray, P. Z. S. 1849, p. 63, pl. 10.

Neomorphus rufipennis, Lawr. Ibis, 1873, p. 292.

Camacusa.

We now possess specimens of all the five species of this genus, and have no doubt as to their specific distinctness.

422. DROMOCOCCYX PAVONINUS.

Dromococcyx pavoninus, Pelz. Orn. Bras. p. 270.

Roraima (3500 ft.).

423. DIPLOPTERUS NÆVIUS.

Diplopterns nævius (Linn.), Scl. Cat. Am. B. p. 321.

Diplopterus galeritus (Ill.), Cab. in Schomb. Guiana, iii. p. 713.

Bartica Grove, Roraima (3500 ft.).

424. PIAYA CAYANA.

Cuculus cayanus, Linn. Syst. Nat. i. p. 170.

Pyrrhococcyx cayanus, Cab. in Schomb. Guiana, iii. p. 713.

Bartica Grove, Camacusa, Roraima (3500 ft.).

425. PIAYA MELANOGASTER.

Cuculus melanogaster, Vieill. N. Dict. d'Hist. Nat. viii. p. 236.

Piaya melanogaster, Scl. & Salv. P. Z. S. 1867, p. 758.

Pyrrhococcyx brachyptera, Less., Cab. in Schomb. Guiana, iii. p. 714.

Bartica Grove, Camacusa, Merumé Mountains.

426*. PIAYA MINUTA.

Piaya minuta (Vieill.), Scl. Cat. Am. B. p. 322.

Pyrrhococcyx minutus, Cab. in Schomb. Guiana, iii. p. 714.

Not represented in Mr. Whitely's collection.

427. COCCYGUS MINOR.

Cuculus minor, Gm. Syst. Nat. i. p. 411.

Coccygus seniculus (Lath.), Scl. Cat. Am. B. p. 323.

Coccygus helviventris, Cab. in Schomb. Guiana, iii. p. 714.

Not represented in Mr. Whitely's collection.

428. COCCYGUS MELANOCORYPHUS.

Coccygus melanocoryphus, Vieill. N. Dict. d'Hist. Nat. viii. p. 271.

Bartica Grove, R. Yuruani.

429. RHAMPHASTOS ERYTHRORHYNCHUS.

Rhamphastos erythrorhynchus, Gm., Cab. in Schomb. Guiana, iii. p. 722; Gould, Mon. Rhamph. pl. 6.

Bartica Grove, Camacusa, Merumé Mountains, Roraima.

430*. RHAMPHASTOS TOCO.

Rhamphastos toco, Gm., Cab. in Schomb. Guiana, iii. p. 721; Gould, Mon. Rhamph. pl. 1.

431*. RHAMPHASTOS DICOLORUS.

Rhamphastos dicolorus, Gm., Cab. in Schomb. Guiana, iii. p. 722; Gould, Mon. Rhamph. pl. 14.

432*. RHAMPHASTOS OSCULANS.

Rhamphastos osculans, Gould, Mon. Rhamph. pl. 10; Cab. in Schomb. Guiana, iii. p. 723.

These three species are not represented in Mr. Whitely's collection.

433. RHAMPHASTOS VITELLINUS.

Rhamphastos vitellinus, Licht., Cab. in Schomb. Guiana, iii. p. 722; Gould, Mon. Rhamph. pl. 13.

Bartica Grove, Camacusa.

434. PTEROGLOSSUS ARACARI.

Pteroglossus aracari (Linn.), Cab. in Schomb. Guiana, iii. p. 720; Gould, Mon. Rhamph. pl. 15.

Bartica Grove.

435. PTEROGLOSSUS VIRIDIS.

Pteroglossus viridis (Linn.), Cab. in Schomb. Guiana, iii. p. 720; Gould, Mon. Rhamph. pl. 24.

Bartica Grove, Camacusa.

436*. PTEROGLOSSUS INSCRIPTUS.

Pteroglossus inscriptus, Sw., Cab. in Schomb. Guiana, iii. p. 721; Gould, Mon. Rhamph. pl. 23.

437*. PTEROGLOSSUS PLURICINCTUS.

Pteroglossus pluricinctus, Gould, Cab. in Schomb. Guiana, iii. p. 721; Gould, Mon. Rhamph. pl. 17.

438*. PTEROGLOSSUS BITORQUATUS.

Pteroglossus bitorquatus, Vig., Cab. in Schomb. Guiana, iii. p. 721; Gould, Mon. Rhamph. pl. 26.

These three species are not represented in Mr. Whitely's collection.

439. SELENIDERA PIPERIVORA.

Pteroglossus piperivorus (Linn.), Cab. in Schomb. Guiana, iii. p. 721; Gould, Mon. Rhamph. pl. 36.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau.

440*. SELENIDERA NATTERERI.

Pteroglossus nattereri, Gould, Cab. in Schomb. Guiana, iii. p. 721.

Selenidera nattereri, Gould, Mon. Rhamph. pl. 34.

Not represented in Mr. Whitely's collection.

441. AULACORHAMPHUS WHITELYANUS.

Aulacorhamphus whitelyanus, Salv. & Godm. Ibis, 1882, p. 83.

Pteroglossus sulcatus, Cab. in Schomb. Guiana, iii. p. 721 (nec Swainson)?

Merumé Mountains, Roraima (3000–3700 ft.).

Mr. Whitely obtained several specimens of this species, all agreeing with the type from the Merumé Mountains. I have little doubt that Schomburgk's birds called *P. sulcatus* also belong to this species.

442. CAPITO NIGER.

Bucco niger, Müll. Natursyst. Suppl. p. 89.

Capito niger, Marshall, Mon. Cap. pl. 58.

Capito cayennensis (Gm.), Cab. in Schomb. Guiana, iii. p. 720.

Bartica Grove, Camacusa, R. Atapurau.

443. ARA CHLOROPTERA.

Ara chloroptera, G. R. Gray, List Psitt. p. 25.

Sittace chloroptera, Finsch, Papag. i. p. 403.

Macrocercus macao, Cab. in Schomb. Guiana, iii. p. 730 (nec L., apud Finsch).

Bartica Grove, Camacusa.

444*. ARA SEVERA.

Conurus severus (Linn.), Cab. in Schomb. Guiana, iii. p. 729.

Sittace severa, Finsch, Papag. i. p. 417.

445*. Ara macao.

Sittace macao (Linn.), Finsch, Papag. i. p. 398.

Macrocercus aracanga (Gm.), Cab. in Schomb. Guiana, iii. p. 729 (apud Finsch).

446*. Ara ararauna.

Macrocercus ararauna (Linn.), Cab. in Schomb. Guiana, iii. p. 730.

Sittace ararauna, Finsch, Papag. i. p. 410.

These three species are not represented in Mr. Whitely's collection.

447. Ara macuvuana.

Conurus macuvuana (Gm.), Cab. in Schomb. Guiana, iii. p. 729.

Sittace macuvuana, Finsch, Papag. i. p. 415.

Roraima (3500 ft.).

Agrees with specimens from Rio Branco (*Natterer*) and from Sarayacu, Ecuador (*Buckley*).

448. Ara hahni.

Psittacara hahni, Souancé, Rev. et Mag. Zool. 1856, p. 58.

Sittace hahni, Finsch, Papag. i. p. 426.

Macrocercus nobilis, Cab. in Schomb. Guiana, iii. p. 729 (nec Linn. apud Finsch).

Roraima (3500 ft.).

449*. Conurus pavua.

Psittacus pavua, Bodd. Tabl. Pl. Enl. p. 10.

Conurus pavua, Finsch, Papag. i. p. 469.

Conurus guianensis (Gm.), Cab. in Schomb. Guiana, iii. p. 729.

450*. Conurus solstitialis.

Conurus solstitialis (Linn.), Cab. in Schomb. Guiana, iii. p. 728; Finsch, Papag. i. p. 491.

451*. Conurus cyanopterus.

Conurus cyanopterus (Bodd.), Finsch, Papag. i. p. 558.

Conurus versicolor (Gm.), Cab. in Schomb. Guiana, iii. p. 728.

452*. CONURUS AUREUS.

Conurus aureus (Gm.), Finsch, Papag. i. p. 499.

Conurus canicularis (Linn.), Cab. in Schomb. Guiana, iii. p. 728.

These four species are not represented in Mr. Whitely's series of specimens.

453. CONURUS PERTINAX.

Conurus pertinax (Linn.), Cab. in Schomb. Guiana, iii. p. 728; Finsch, Papag. i. p. 506.

Roraima (3500 ft.).

454. CONURUS EGREGIUS.

Conurus egregius, Scl. Ibis, 1881, p. 130, pl. iv.; Salv. & Godm. Ibis, 1882, p. 83.

Merumé Mountains, Roraima (3500–4000 ft.).

455. BROTOGERYS CHRYSOPTERA.

Psittacus chrysopterus, Linn. Syst. Nat. i. p. 149.

Conurus tuiparus (Gm.), Cab. in Schomb. Guiana, iii. p. 727.

Bartica Grove, Camacusa.

456*. BROTOGERYS TIRIACULA.

Psittacus tiriacula, Bodd. Tabl. Pl. Enl. p. 51.

Conurus tiriacula, Cab. in Schomb. Guiana, iii. p. 727.

Brotogerys tirica, Finsch, Papag. ii. p. 89, ex Gm.

Not represented in Mr. Whitely's collection.

457. BROTOGERYS PANYCHLORUS.

Brotogerys panychlorus, Salv. & Godm. Ibis, 1883, p. 211, pl. ix. f. 1.

Roraima (3500 ft.).

458*. CHRYSOTIS FESTIVA.

Psittacus festivus, Linn., Cab. in Schomb. Guiana, iii. p. 724.

Chrysotis festiva, Finsch, Papag. ii. p. 511.

Not represented in Mr. Whitely's collection.

459. CHRYSOTIS CŒLIGENA.

Chrysotis cœligena, Scl. P. Z. S. 1860, p. 68, pl. 9; Lawr. Ibis, 1880, p. 237; Ibis, 1881, p. 414.

Psittacus dufresneanus, Cab. in Schomb. Guiana, iii. p. 724 (nec Kuhl)?

Bartica Grove, Camacusa.

460*. CHRYSOTIS FARINOSA.

Chrysotis farinosa (Bodd.), Finsch, Papag. ii. p. 565.

Psittacus pulverulentus, Gm., Cab. in Schomb. Guiana, iii. p. 724.

Not represented in Mr. Whitely's collection.

461. CHRYSOTIS AMAZONICA.

Chrysotis amazonica (Linn.), Finsch, Papag. ii. p. 570.

Psittacus æstivus, Cab. in Schomb. Guiana, iii. p. 725 (apud Finsch).

Camacusa, Roraima (3500 ft.).

462. CHRYSOTIS OCHROCEPHALA.

Psittacus ochrocephalus, Linn.?, Cab. in Schomb. Guiana, iii. p. 724.

Chrysotis ochrocephala, Finsch, Papag. ii. p. 584.

Bartica Grove, Camacusa.

463. DEROPTYUS ACCIPITRINUS.

Deroptyus accipitrinus (Linn.), Cab. in Schomb. Guiana, iii. p. 726.

Pionias accipitrinus, Finsch, Papag. ii. p. 466.

Camacusa, Merumé Mountains.

464. PIONUS MENSTRUUS.

Psittacus menstruus, Linn., Cab. in Schomb. Guiana, iii. p. 723.

Pionias menstruus, Finsch, Papag. ii. p. 441.

Bartica Grove, Camacusa, Merumé Mountains, Roraima.

465. CAICA HISTRIO.

Pionias histrio (Bodd.), Finsch, Papag. ii. p. 429.

Psittacus pileatus, Gm., Cab. in Schomb. Guiana, iii. p. 723.

Bartica Grove, Camacusa.

466. CAICA MELANOCEPHALUS.

Psittacus melanocephalus, Linn., Cab. in Schomb. Guiana, iii. p. 723.

Pionias melanocephalus, Finsch, Papag. ii. p. 432.

Bartica Grove, Camacusa, Merumé Mountains.

467*. CAICA MAXIMILIANI.

Psittacus maximiliani, Kuhl, Cab. in Schomb. Guiana, iii. p. 723.

Not represented in Mr. Whitely's collection.

468. UROCHROMA PURPURATA.

Psittacus purpuratus, Gm., Cab. in Schomb. Guiana, iii. p. 723.

Psittacula purpurata, Finsch, Papag. ii. p. 680.

Bartica Grove, Merumé Mountains, Roraima (3500 ft.).

469*. PSITTACULA PASSERINA.

Psittacula passerina (Linn.), Cab. in Schomb. Guiana, iii. p. 726.

470*. PSITTACULA CYANOPTERA.

Psittacula gregarius (Spix), Cab. in Schomb. Guiana, iii. p. 727.

Mr. Whitely did not procure any specimens of *Psittacula.* The two birds obtained by Schomburgk, and called *P. passerina* and *P. gregarius,* probably belonged to one species, the true *P. passerina* (Linn.).

471*. PSITTACULA MODESTA.

Psittacula modesta, Cab. in Schomb. Guiana, iii. p. 727.

There are no specimens answering to this description in Mr. Whitely's collection. Graf von Berlepsch is of opinion that *P. sclateri* of the Amazons is referable to this species, *P. modesta* being the older title.

472. STRIX FLAMMEA.

Strix flammea, Linn. Syst. Nat. i. p. 133; Sharpe, Cat. B. Brit. Mus. ii. p. 291.

Strix perlata, Licht., Cab. in Schomb. Guiana, iii. p. 732.

Roraima (4000 ft.).

473*. BUBO VIRGINIANUS.

Bubo virginianus (Gm.), Cab. in Schomb. Guiana, iii. p. 733; Sharpe, Cat. B. Brit. Mus. ii. p. 19.

Not represented in Mr. Whitely's collection.

474. Scops brasilianus.

Scops brasilianus (Gm.), Sharpe, Cat. B. Brit. Mus. ii. p. 108.

Scops choliba (Vieill.), Cab. in Schomb. Guiana, iii. p. 733.

Roraima (3500 ft.).

475*. Scops asio?

Scops asio ?, Cab. in Schomb. Guiana, iii. p. 733.

I do not know to what bird this name refers, but it can hardly be *S. asio*, a North-American species.

476. Pulsatrix torquata.

Athene torquata (Daud.), Cab. in Schomb. Guiana, iii. p. 732.

Syrnium perspicillatum (Lath.), Sharpe, Cat. B. Brit. Mus. ii. p. 277.

Bartica Grove.

477. Ciccaba hulula.

Syrnium hululum (Daud.), Sharpe, Cat. B. Brit. Mus. ii. p. 275.

Athene lineata (Shaw), Cab. in Schomb. Guiana, iii. p. 732.

Merumé Mountains.

478. Ciccaba superciliaris.

Syrnium superciliare, Pelz. Verh. z.-b. Ges. Wien, 1863, p. 1125; Sharpe, Cat. B. Brit. Mus. ii. p. 271.

Camacusa, Roraima (3500 ft.).

The two birds in Mr. Whitely's collection agree with the specimen in the British Museum from Brazil thus named by Mr. Sharpe. The other specimen in the same Museum from Para has, as Mr. Sharpe has pointed out, a darker tail, with fewer and lighter bars. It has been suggested to me by Mr. Gurney that the Guianan birds may belong to the unrecognized *Strix cayennensis,* Gm.; but, judging from Buffon's plate, I hesitate to accept this identification.

479*. Speotyto cunicularia.

Athene cunicularia (Mol.), Cab. in Schomb. Guiana, iii. p. 731.

Speotyto cunicularia, Sharpe, Cat. B. Brit. Mus. ii. p. 142.

Not represented in Mr. Whitely's collection.

480. Glaucidium phalænoides.

Strix phalænoides, Daud. Traité, ii. p. 206.

Glaucidium ferox, Sharpe, Cat. B. Brit. Mus. ii. p. 200 (partim).

Athene passerinoides (Temm.), Cab. in Schomb. Guiana, iii. p. 731.

Merumé Mountains, Roraima (3500 ft.).

481. Glaucidium pumilum.

Glaucidium pumilum (Temm.), Sharpe, Cat. B. Brit. Mus. ii. p. 198.

Camacusa.

482*. Asturina nitida.

Asturina nitida (Lath.), Cab. in Schomb. Guiana, iii. p. 737; Sharpe, Cat. B. Brit. Mus. i. p. 203.

Not represented in Mr. Whitely's collection.

483. Asturina magnirostris.

Asturina magnirostris (Gm.), Scl. & Salv. P. Z. S. 1869, p. 131.

Rupornis magnirostris, Cab. in Schomb. Guiana, iii. p. 737.

Bartica Grove, Camacusa, Merumé Mountains, R. Atapurau.

484*. Buteo abbreviatus.

Buteo abbreviatus, Cab. in Schomb. Guiana, iii. p. 739.

Tachytriorchis abbreviatus, Sharpe, Cat. B. Brit. Mus. i. p. 163.

Not represented in Mr. Whitely's collection.

485. Buteo unicolor.

Buteo unicolor, d'Orb. & Lafr. Syn. Av. p. 7.

Merumé Mountains, Roraima (3500 ft.).

Mr. Whitely obtained two specimens of this Buzzard, one of which I sent to Mons. E. Oustalet, requesting him to be kind enough to compare it with the type of *Buteo unicolor* of d'Orbigny from Bolivia. His reply is as follows:—

"Muséum d'Histoire Naturelle, Paris,
4 juin, 1885 (soir).

"Cher Monsieur Salvin,—Suivant le désir que vous avez exprimé, j'ai comparé l'oiseau que vous m'avez envoyé par l'intermédiaire de M. Stolzmann avec le type du *Buteo unicolor* de d'Orbigny, et j'ai reconnu que les deux spécimens appartenaient très probablement à la même espèce. Cependant les dimensions des ailes ne sont pas absolument concordants, et le plumage, tout en offrant le même dessin, n'est pas entièrement identique sous le rapport des nuances. Ainsi dans le type de *Buteo unicolor* l'aile mesure 37 centimètres, et le doigt médian 3 centimètres (sans l'ongle), tandis que dans le *Buteo* de votre collection l'aile mesure 41 centimètres et le doigt médian près de 4 centimètres. Le type de *Buteo unicolor* est d'un brun fuligineux, avec quelques marques blanches (formées sur la base des plumes) sur la nuque, les ailes brunes avec des raies transversales peu distinctes sur les pennes secondaires, la queue d'un brun grisâtre avec de nombreuses stries transversales brunes, assez apparentes.

"L'oiseau est donc moins foncé en couleur, d'un brun beaucoup moins noir que le spécimen de votre collection, et il a les ailes et les doigts un peu plus courts; mais ses tarses ont la même longueur, son bec la même forme, ses rémiges les mêmes proportions (la 3^{me} étant la plus longue) ; sa queue et ses ailes présentent le même dessin sur la face supérieure; son front est marqué au dessus des lorums de la même petite tache blanche &c.

"Ces légères différences seraient faciles à expliquer si votre spécimen était une ♀, mais c'est un ♂, et c'est dès lors un peu étonnant qu'il soit légèrement plus grand que le type de *Buteo unicolor*, dont le sexe n'est d'ailleurs pas indiqué. Ce type a été rapporté de Bolivie en 1834 par d'Orbigny, et c'est le seul individu de cette espèce que nous possédions, de sorte que je ne puis savoir si les variations dans les longueurs des doigts et des ailes sont fréquentes chez cet oiseau. Pour moi ces variations sont peu importantes.

"Telles sont les quelques remarques que je puis vous transmettre à cet égard, en vous priant de recevoir la nouvelle assurance de mes meilleures sentiments.

"E. Oustalet."

486. Buteo albicaudatus.

Buteo albicaudatus, Vieill. N. Dict. d'Hist. N. iv. p. 477.

Buteo pterocles, Cab. in Schomb. Guiana, iii. p. 739.

Roraima (3500 ft.).

487*. Buteogallus æquinoctialis.

Buteogallus æquinoctialis (Gm.), Sharpe, Cat. B. Brit. Mus. i. p. 212.

Hypomorphnus buson (Daud.), Cab. in Schomb. Guiana, iii. p. 740.

Not represented in Mr. Whitely's collection.

488*. Busarellus nigricollis.

Ichthyoborus busarellus (Shaw), Cab. in Schomb. Guiana, iii. p. 739.

Busarellus nigricollis (Lath.), Sharpe, Cat. B. Brit. Mus. i. p. 211.

Not represented in Mr. Whitely's collection.

489*. Urubitinga zonura.

Hypomorphnus urubitinga (Gm.), Cab. in Schomb. Guiana, iii. p. 740.

Urubitinga zonura (Shaw), Sharpe, Cat. B. Brit. Mus. i. p. 213.

Not represented in Mr. Whitely's collection.

490*. Urubitinga anthracina.

Hypomorphnus anthracinus (Nitzsch), Cab. in Schomb. Guiana, iii. p. 740.

Urubitinga anthracina, Sharpe, Cat. B. Brit. Mus. i. p. 215.

Not represented in Mr. Whitely's collection.

491*. Heterospizias meridionalis.

Heterospizias meridionalis (Lath.), Sharpe, Cat. B. Brit. Mus. i. p. 160.

Hypomorphnus rutilans (Licht.), Cab. in Schomb. Guiana, iii. p. 740.

Not represented in Mr. Whitely's collection.

492. Leucopternis albicollis.

Falco albicollis, Lath. Ind. Orn. p. 36.

Urubitinga albicollis, Sharpe, Cat. B. Brit. Mus. i. p. 216.

Asturina pœcilonotus (Temm.), Cab. in Schomb. Guiana, iii. p. 737.

Camacusa.

493. LEUCOPTERNIS MELANOPS.

Falco melanops, Lath. Ind. Orn. p. 37.

Urubitinga melanops, Sharpe, Cat. B. Brit. Mus. i. p. 220.

Asturina melanops, Cab. in Schomb. Guiana, iii. p. 737.

R. Atapurau.

494*. THRASAETUS HARPYIA.

Morphnus harpyia (Linn.), Cab. in Schomb. Guiana, iii. p. 738.

Thrasaetus harpyia, Sharpe, Cat. B. Brit. Mus. i. p. 224.

Not represented in Mr. Whitely's collection.

495. MORPHNUS GUIANENSIS.

Falco guianensis, Daud. Traité, ii. p. 78.

Morphnus guianensis, Cab. in Schomb. Guiana, iii. p. 738; Sharpe, Cat. B. Brit. Mus. i. p. 222.

Bartica Grove.

496. SPIZAETUS ORNATUS.

Falco ornatus, Daud. Traité, ii. p. 77.

Spizaetus mauduyti (Daud.), Sharpe, Cat. B. Brit. Mus. i. p. 262.

Bartica Grove.

497. ACCIPITER BICOLOR.

Accipiter bicolor (Vieill.), Scl. & Salv. Ex. Orn. pp. 137, 170, pl. 69.

Nisus sexfasciatus (Sw.), Cab. in Schomb. Guiana, iii. p. 736.

Bartica Grove, Roraima (3000 ft.).

498. MICRASTUR SEMITORQUATUS.

Micrastur semitorquatus (Vieill.), Scl. & Salv. P. Z. S. 1869, p. 365; Sharpe, Cat. B. Brit. Mus. i. p. 75.

Roraima (3500 ft.).

499. MICRASTUR GILVICOLLIS.

Micrastur gilvicollis (Vieill.), Scl. & Salv. P. Z. S. 1869, p. 368; Sharpe, Cat. B. Brit. Mus. i. p. 78.

Climacocercus concentricus (Less.), Cab. in Schomb. Guiana, iii. p. 738.

Bartica Grove, Camacusa.

500. GERANOSPIZIAS GRACILIS.

Ischnosceles gracilis (Temm.), Cab. in Schomb. Guiana, iii. p. 737.

There are no specimens of *Geranospizias* in Mr. Whitely's collection, so that I am unable to say whether the Guianan bird belongs to *G. gracilis* or to *G. hemidactylus,* races united by Mr. Sharpe under Vieillot's name *cærulescens* (Cat. B. Brit. Mus. i. p. 81). But on this point see Mr. Gurney's remarks (Ibis, 1875, p. 233).

501. HYPOTRIORCHIS FEMORALIS.

Hypotriorchis femoralis (Temm.), Cab. in Schomb. Guiana, iii. p. 734.

Falco fusco-cærulescens, Vieill., Sharpe, Cat. B. Brit. Mus. i. p. 400.

Roraima (3500 ft.).

502. HYPOTRIORCHIS RUFIGULARIS.

Falco rufigularis, Daud. Traité, ii. p. 131.

Falco aurantius, Cab. in Schomb. Guiana, iii. p. 733.

Falco albigularis, Daud., Sharpe, Cat. B. Brit. Mus. i. p. 401.

Bartica Grove, Camacusa, Roraima (3500 ft.).

503. TINNUNCULUS ISABELLINUS.

Falco isabellinus, Sw. An. in Menag. p. 281.

Cerchneis isabellina, Sharpe, Cat. B. Brit. Mus. i. p. 441.

Cerchneis sparverius, Cab. in Schomb. Guiana, iii. p. 734.

Roraima (3500 ft.).

504. ELANOIDES FURCATUS.

Nauclerus furcatus (Linn.), Cab. in Schomb. Guiana, iii. p. 735.

Elanoides furcatus, Sharpe, Cat. B. Brit. Mus. i. p. 317.

Bartica Grove.

505. ELANUS LEUCURUS.

Elanus leucurus (Vieill.), Cab. in Schomb. Guiana, iii. p. 735; Sharpe, Cat. B. Brit. Mus. i. p. 339.

Roraima (3500 ft.).

506. Gampsonyx swainsoni.

Gampsonyx swainsoni, Vig., Cab. in Schomb. Guiana, iii. p. 735; Sharpe, Cat. B. Brit. Mus. i. p. 340.

Merumé Mountains.

507. Ictinia plumbea.

Ictinia plumbea (Gm.), Cab. in Schomb. Guiana, iii. p. 735; Sharpe, Cat. B. Brit. Mus. i. p. 364.

Bartica Grove.

508*. Rostrhamus sociabilis.

Rostrhamus sociabilis (Vieill.), Sharpe, Cat. B. Brit. Mus. i. p. 327.

Rostrhamus hamatus (Ill.), Cab. in Schomb. Guiana, iii. p. 736.

509. Leptodon cayennensis.

Odontriorchis cayennensis (Gm.), Cab. in Schomb. Guiana, iii. p. 736.

Leptodon cayennensis, Sharpe, Cat. B. Brit. Mus. i. p. 333.

Roraima.

510. Leptodon uncinatus.

Regerhinus uncinatus (Temm.), Cab. in Schomb. Guiana, iii. p. 736.

Leptodon uncinatus, Sharpe, Cat. B. Brit. Mus. i. p. 330.

Camacusa.

511. Harpagus bidentatus.

Harpagus bidentatus (Lath.), Cab. in Schomb. Guiana, iii. p. 734; Sharpe, Cat. B. Brit. Mus. i. p. 362.

Bartica Grove.

512*. Herpetotheres cachinnans.

Herpetotheres cachinnans (Linn.), Cab. in Schomb. Guiana, iii. p. 738; Sharpe, Cat. B. Brit. Mus. i. p. 278.

Not represented in Mr. Whitely's collection.

513. Ibycter americanus.

Ibycter americanus (Bodd.), Sharpe, Cat. B. Brit. Mus. i. p. 35.

Ibycter aquilinus (Gm.), Cab. in Schomb. Guiana, iii. p. 742.

Bartica Grove, Camacusa.

514*. IBYCTER ATER.

Daptrius ater, Vieill., Cab. in Schomb. Guiana, iii. p. 742.

Ibycter ater, Sharpe, Cat. B. Brit. Mus. i. p. 35.

Not represented in Mr. Whitely's collection.

515. MILVAGO CHIMACHIMA.

Milvago chimachima (Vieill.), Cab. in Schomb. Guiana, iii. p. 741.

Ibycter chimachima, Sharpe, Cat. B. Brit. Mus. i. p. 39.

Merumé Mountains.

516*. POLYBORUS CHERIWAY.

Polyborus cheriway (Jacq.), Cab. in Schomb. Guiana, iii. p. 741; Sharpe, Cat. B. Brit. Mus. i. p. 33.

Not represented in Mr. Whitely's collection.

517*. CATHARTES AURA.

Cathartes aura (Linn.), Cab. in Schomb. Guiana, iii. p. 742.

Œnops aura, Sharpe, Cat. B. Brit. Mus. i. p. 25.

518*. CATHARTES ATRATUS.

Cathartes fœtens (Ill.), Cab. in Schomb. Guiana, iii. p. 742.

Catharistes atratus, Sharpe, Cat. B. Brit. Mus. i. p. 24.

519*. GYPAGUS PAPA.

Sarcorhamphus papa (Linn.), Cab. in Schomb. Guiana, iii. p. 743.

Cathartes papa, Sharpe, Cat. B. Brit. Mus. i. p. 22.

These three Vultures are not represented in Mr. Whitely's collection.

[To be continued.]

XII.—*Notices of Recent Ornithological Publications.*

1. *'The Auk,'* 1885, No. 4.

['The Auk,' a Quarterly Journal of Ornithology. Continuation of the 'Bulletin of the Nuttall Ornithological Club.' Published for the American Ornithologists' Union. Vol. II. October, 1885. No. 4. Boston, Mass.]

Besides the usual series of interesting articles on North-

American birds, in the course of which several new subspecies are characterized, Mr. Lawrence describes in this number two new species of Pigeons of the genus *Zenaida*—*Z. rubripes*, from Grenada, W. I., and *Z. bogotensis*, from Bogota. Mr. Stejneger continues his "Analecta Ornithologica," and proposes to transfer the generic name *Parra* from the Jacanas to the Spur-winged Plovers (*Lobivanellus*), because Linnæus placed in his genus *Parra*, besides the well-known *Parra jacana*, two species of the latter group. Our friend may be technically correct, but we do not think he will get many of his brother ornithologists to follow his lead. He has done better service in pointing out that *Podiceps nigricollis* is not a Nearctic species, and by telling us where the genus *Simorhynchus* was first established by Merrem.

2. *Berlepsch and Jhering on South-Brazilian Birds.*

[Die Vögel der Umgegend von Taquara do Mundo Novo, Prov. Rio Grande do Sul. Von Hans v. Berlepsch und Dr. Herman v. Jhering. Zeitsch. f. d. ges. Ornithol. 1885.]

Taquara do Mundo Novo is the chief place of the colony "Mundo Novo," which is situated on the upper course of the Rio dos Sinos, in Rio Grande do Sul, the most southern province of the Brazilian empire. Dr. v. Jhering passed three years there, and during a subsequent visit of six months devoted the whole of his time to natural history. After an excellent disquisition on the natural features of the district by the last-mentioned author, Graf v. Berlepsch gives an account of the 234 species of birds of which specimens were collected or observed by Dr. v. Jhering and his friends, in his usual exact style. Field-notes by Dr. v. Jhering are added. The arrangement and names are generally those of the 'Nomenclator Avium Neotropicalium,' but several changes in the nomenclature of well-known species are proposed. The avifauna of this district agrees nearly with that of the adjacent provinces Sta. Catharina and San Paolo, only 9 species out of the 234 mentioned not being known to occur there also. Of these, *Picumnus jheringi* and *Chrysotis pretrei* have, as yet, only been found in Rio Grande do Sul. The following species are figured :—*Pyrrhocoma ruficeps* (♂ and ♀), *Spermophila superciliaris, Haplospiza unicolor* (♂ and ♀), *Picumnus jheringi,* and *P. temmincki.*

3. *R. Blasius on Collections in the Mark and Pomerania.*

[Naturhistorische Studien und Reiseskizzen aus der Mark und Pommern. Von Dr. R. Blasius. Parts I., II. Monatschr. deutsch. Ver. zum Schutze der Vogelwelt, 1884, Nos. 7–10.]

The author gives a very interesting account of a visit paid in May 1883 to the well-known collections of Dr. Altum at Eberswalde, Herr E. v. Homeyer at Stolp, and Herr Tancré at Anclam, and adds copious accounts of the many rarities and of the fine series of forms of various species from different localities examined in each of them.

4. *R. Blasius on Collections in Sweden and Norway.*

[Naturhistorische Studien und Reiseskizzen aus Schweden und Norwegen im Frühjahre 1884. Von Dr. R. Blasius. Mitth. des ornithol. Vereines in Wien, 1884.]

This is a somewhat similar journal of the author's tour in Sweden and Norway in 1884, and contains much useful information about the collections visited and the brother-naturalists interviewed.

5. *Büttikofer on Liberian Birds.*

[Zoological Researches in Liberia. A List of Birds collected by J. Büttikofer and G. F. Sala in Western Liberia, with Biological Observations. By J. Büttikofer. Notes Leyden Mus. vii. p. 129.]

Mr. Büttikofer commences his article with very full descriptions of Liberia, of its different regions, and of the general character of its varied fauna, which will be read with great interest by every naturalist. Landing at Monrovia, the capital of the Negro republic, in January 1880, our author and his companion fixed their first collecting-station at Soforé Place, on the St. Paul's river, celebrated as the only river inhabited by *Hippopotamus liberiensis.* In October 1880, they transferred their quarters to Robertsport, the port of the Grand Cape Mount District, some forty-five miles west of Monrovia. In this splendid but unhealthy district, Mr. Sala succumbed to the noxious climate in June 1881, and a year later Mr. Büttikofer was obliged, on account of broken health, to return to Europe.

The fauna of Liberia, according to Mr. Büttikofer's investigations, has more similarity to that of Sierra Leone than to that of the Gold Coast. *Psittacus timneh* is the Liberian representative of *Ps. erithacus,* and *Agapornis swinderniana* of *A. pullaria.*

Mr. Büttikofer's list of Liberian birds comprehends 162 species, concerning which many excellent notes are given. *Columba unicincta,* Cassin, is figured. A map of the district explored is appended, as should be done in all articles on the animals of a particular locality. Altogether we consider this paper a model of what such a memoir ought to be.

6. *Büttikofer on* Glareola megapoda.

[A Supplementary Note on *Glareola megapoda.* By J. Büttikofer. Notes Leyden Mus. vii. p. 256.]

A note received from Dr. Guillemard tends to confirm the distinctness of this species, which was called by Schlegel *Glareola nuchalis liberiæ.*

7. *Cazin on* Plotus melanogaster.

[Note sur la Structure de l'estomac du *Plotus melanogaster.* Par M. M. Cazin. Ann. d. Sci. Nat. xviii. art. 3.]

The author, in a brief note, records the structure of the stomach in *Plotus melanogaster.* His account is confirmatory of that of the late W. A. Forbes, who has described this species (P. Z. S. 1882, p. 208), and whose memoir has apparently escaped the attention of M. Cazin.

8. *Dixon on Evolution without Natural Selection.*

[Evolution without Natural Selection; or, the Segregation of Species without the Aid of the Darwinian Hypothesis. By Charles Dixon. London: 1885. 12mo. 80 pp.]

Although Mr. Dixon claims, in his little volume, not to have written "a single syllable antagonistic to Darwin's Theory of Natural Selection," we are not at all sure that those who have read his interesting essay will be able to acquit him of having committed this indiscretion. It is quite certain that Isolation—the *prime* factor, according to Mr. Dixon—plays a great part in the modification of species; for without isolation, as Mr. Dixon himself very clearly shows, the members of a species can breed freely together, and little or no variation will be produced. But surely neither Darwin nor his disciples have ever ignored the force of this element in the variation of species. Isolation, no doubt, plays a most important part in the preservation of differences when they have arisen. Mr. Dixon has not told us how isolation can make differences. Climatic Influence, of which Mr. Dixon speaks in his second chapter, is, in many cases, an important factor in their production; but where this does not come into play, as is often the case, we cannot understand how Mr. Dixon proposes to get on without Natural Selection; and even when climatic influence is manifestly an impelling cause of variation, "Natural Selection" may be a concomitant factor. While thanking him, therefore, for his essay, we still think that he has failed to show that we can get on "without the aid of the Darwinian Hypothesis."

9. *W. Evans on some Scottish Birds.*

[Notes on the Birds of the Island of Eigg. Pr. R. Phys. Soc. Edinb. 1885, pp. 430–448.

Note on the Breeding of the Marsh-Tit (*Parus palustris*) in Stirlingshire during 1884. *Tom. cit.* pp. 448–451.]

Lest any of our readers should be so ignorant of Scottish geography as not to know the precise position of Eigg, we may make a concession, and state that it lies about halfway between the island of Rum and that portion of the mainland where Inverness-shire (to which it belongs) marches with Argyll. On Eigg Mr. Evans passed about five days, and from his own observations, largely supplemented by notes from journals kept by Messrs. J. J. Dalgleish, A. C. Stark, A. F.

Joass, and others, he has compiled a list of 84 species of birds, with some interesting details. The westward spread of the Tree-Sparrow (*Passer montanus*) is remarkable for its rapidity, unless, indeed, the species had previously been overlooked. It was only in 1882 that Mr. Dalgleish discovered its existence on the west coast to the north of the Clyde, and now we know that there is a colony on Eigg, while Mr. Dixon has obtained it on the remote St. Kilda (*cf.* Ibis, 1885, p. 82). When Mr. R. Gray wrote his 'Birds of the West of Scotland,' neither the Bullfinch nor the Goldfinch appear to have been known as visitors to this or the other islands of the Inner Hebrides. The characteristic bird of Eigg appears to be the Manx Shearwater.

Mr. Evans's second paper is almost sufficiently explained by the title. An authentic nest of the Marsh-Tit has not been known in the valley of the Forth since 1838.

10. *W. A. Forbes's Scientific Papers.*

[The Collected Scientific Papers of the late William Alexander Forbes, M.A., Fellow of St. John's College, Cambridge; Lecturer on Comparative Anatomy at Charing Cross Hospital; Prosector to the Zoological Society of London. Edited by F. E. Beddard, M.A., Prosector to the Zoological Society of London. With a Preface by P. L. Sclater, M.A., Ph.D., F.R.S., Secretary to the Zoological Society of London.]

Little introduction will be required by readers of 'The Ibis' to the present volume, which contains all the published writings of our much-lamented associate, including his most important work, the Report on the Tubinares collected during the voyage of the 'Challenger.' Not only the letterpress, but also the plates which illustrate his different papers have been reproduced, and together form a handsome volume of nearly 500 pages and 25 plates. Nearly all Forbes's work was done during his tenure of the office of Prosector to the Zoological Society of London, a period of only two and a half years. The enormous amount of work that he was able to accomplish during that short term (which was still further reduced by a trip to North America in the summer of 1880 and by his last journey to Africa, commenced in July 1882) is a striking testimony to his energy and ability. Forbes's work was chiefly directed to the structure of birds, but the volume also contains some valuable contributions to systematic ornithology as well as to the anatomy of Mammalia. Even to those who had not the pleasure of Forbes's personal acquaintance it will be evident, from the perusal of his memoirs, that Forbes combined in the highest degree the skill of an anatomist with the powers of observation of a field-naturalist—a combination which is very rarely to be found, and which has rendered his premature death ever to be regretted in the interests of science.

11. *Gadow on the Anatomy of Birds.*

[Dr. H. G. Bronn's Klassen und Ordnungen des Thierreichs wissenschaftlich dargestellt in Wort und Bild. Fortgesetzt von Dr. Hans Gadow. Band VI. Abth. IV. Aves. Lief. 7, 8, u. 9, 1884; Lief. x. 1885.]

Dr. Hans Gadow has courageously taken up the section of Bronn's 'Thierreich' devoted to Birds, left incomplete by Selenka in 1870, and has already issued two new parts. The first four sheets are destined to supersede the corresponding portion of the original issue, so that we have the great advantage of an account of the whole of the muscular structure of birds by one of our best authorities on the subject.

It is, we think, by no means certain that other portions of Prof. Selenka's work would not have been improved by a similar revision. Great additions to our knowledge of the osteology of birds have been made during the past fourteen years. But a new work on the anatomy of the Class Aves is much wanted, and we trust that Dr. Gadow will bring this long-delayed portion of Bronn's 'Thierreich' to a speedy conclusion. There is no doubt that it will be the best modern authority on the subject.

12. *Giglioli on the Ornithological Congress at Vienna.*

[Il primo Congresso internazionale tenuto a Vienna dal 7 al 14 Aprile, 1884. Relazione del Delegato del Governo Italiano, Dott. Enrico H. Giglioli. Annali di Agricoltura, 1885. Roma: 1885. 59 pp.]

The Report furnished by Dr. Giglioli to the Italian Minister of Agriculture, Industry, and Commerce is a model of compilation, being clear without unnecessary length, and condensed without the omission of a single important point in the varied discussions which took place. Some of these were evidently of a rather confused character, several of the delegates being far more anxious to ventilate their own (often impracticable) views than to listen to the opinions, or even the remonstrances, of others; consequently it was at times by no means easy to follow the course of the proceedings. Only to the more moderate of the delegates did it seem to occur that in different countries there is considerable divergence of opinion as to whether certain birds are injurious or not; or that, from the varying nature of their food, the same species may be destructive in places where they pass the summer, and beneficial to the countries which they frequent in winter. M. Fatio went so far as to demand, "in the name of agriculture and of sylviculture, in the name of common right and in the name of humanity, *as well as* in the name of Switzerland, of the Swiss Society, and of the Society for the Protection of Animals" (!), that the capture of Quails should not be permitted on migration on the shores of the Mediterranean, in order that these birds should be allowed to reach more northern regions. It can easily be understood that Dr. Giglioli as the representative of Italy, where Quails are taken in thousands for the supply of the markets of Paris and London, could, with his practical mind, see no chance of such a notion receiving attention from the Italian Government.

13. *Kirk on Variations in New-Zealand Birds.*

[Notes on some New Zealand Birds, exhibiting curious Variations of Colour. By T. W. Kirk. Trans. & Proc. New Zealand Inst. vol. xvii. p. 60.]

Mr. Kirk records the occurrence of partially albinoid varieties in several species of New-Zealand birds—*Glaucopis wilsoni*, *Ardea pœciloptila*, *Anas chlorotis*, and *Ossifraga gigantea*; also a variety of *Nestor meridionalis*, similar to that on which the *Nestor superbus* of Buller was founded.

14. *Kirk on the Eastern Golden Plover.*

[Notice of the Occurrence of the Eastern Golden Plover (*Charadrius fulvus*, Gmel.) near Wellington. By T. W. Kirk. Trans. & Proc. New Zealand Inst. vol. xvii. p. 59.]

Mr. Kirk records the occurrence in Worser Bay, New Zealand, in the month of November, of a specimen of *Charadrius fulvus* "in splendid plumage." A pair of the same species were subsequently shot at Island Bay. As already stated (*cf.* Ibis, 1885, p. 114), this species has been recorded by Messrs. Robson and Buller as breeding in New Zealand.

15. *Lansdell's 'Central Asia.'*

[Russian Central Asia, including Kuldja, Bokhara, Khiva, and Merv. By Henry Lansdell, D.D. 2 vols. London: 1885.]

The Appendix to the second volume of Dr. Lansdell's interesting narrative contains a nominal list of the birds of Turkestan, compiled from Severtzoff's contribution on that subject to Fedchenko's 'Puteshestviye v' Turkestan,' or, as it is sometimes called, 'Turkestanje Jevotnie.' The vertical and horizontal distribution are shown in parallel columns. The English names, and an additional column devoted to the Pamir district, have been added by Mr. Dresser. The species enumerated are 385. As no complete translation of Severtzoff's work has ever been published, Dr. Lansdell's Appendix will be useful for reference to those who do not understand Russian.

16. *Lilford's 'British Birds.'*

[Coloured Figures of the Birds of the British Islands. Issued by Lord Lilford, F.Z.S. &c., President of the British Ornithologists' Union. Part I. October, 1855. 8vo. London.]

The illustrations to this work are from drawings by Keulemans, printed by chromo-lithography in Germany, the species represented in this part being the Mistletoe-Thrush, Song-Thrush, Redwing, Fieldfare, Ring-Ouzel, Pied Rock-Thrush, Wheatear, Black-throated Wheatear, Redstart, Black Redstart, Whitethroat, and Blackcap. The plates are excellent of their kind, and in the letterpress the short sketches of the general distribution of each species seem to fulfil their purpose. Some errors in the authorities for the specific names are corrected in the table of contents on the wrapper. With regard to the species which Lord Lilford terms, doubtless to distinguish it from a congener, the Pied Rock-Thrush (*Monticola saxatilis*), we are somewhat surprised to be told that "the recorded occurrence in England is in all probability that of a bird escaped from captivity." There is no hint of a suspicion of this kind in the fourth edition of 'Yarrell's British Birds': the undoubted specimen, now in Mr. Newcome's collection, was obtained on the 19th May, 1843, at the epoch of the vernal migration northwards; the species has occurred in Belgium and on Heligoland, and it breeds as far north as the Hartz Mountains; there is therefore no inherent difficulty in assuming the genuineness of its visit to our shores. If our esteemed President has any private sources of information on this subject, we shall be glad to learn them.

17. *Milne-Edwards and Oustalet on the Birds of Grand Comoro.*

[Observations sur la Faune de la grande Comore. Par MM. A. Milne-Edwards et E. Oustalet. Compt. Rend. Paris, ci. p. 218 (July 1885).]

The authors give an account of the collections of mammals and birds made by M. Humblot during several months' residence in the island of Grand Comoro. The birds of which specimens were obtained are referable to 35 species. Some of these are of wide distribution, and some have been introduced; but the greater number of them may be regarded as immigrants from adjacent lands, which are either unchanged or have undergone slight modification, and have become what M. Milne-Edwards has termed, in his 'Recherches sur la Faune des Régions Australes,' *secondary* or *derived* species. These are shortly indicated as:—*Coracopsis sibilans, Circus humbloti, Leptosomus gracilis, Cinnyris humbloti, Zosterops mouroniensis, Z. angasizæ, Turdus comorensis, Graucalus cucullatus, Gr. sulphureus, Terpsiphone comorensis, Hypsipetes* *parvirostris*, and *Foudia consobrina*. Besides these, there is in the collection a new form of Muscicapidæ allied to *Smithornis* and *Pseudobias*, proposed to be called *Humblotia flavirostris*. We trust that further details and complete descriptions will soon be given of this very interesting collection.

18. *Oustalet on the Ornithological Congress of Vienna.*

[Rapport à M. le Ministre de l'Instruction publique et des Beaux-Arts sur le Congrès et l'Exposition Ornithologiques de Vienne en 1884. Par M. E. Oustalet. Extr. des Archives des Missions Scientifiques et Littéraires, sér. iii. vol. xii. Paris, 1885.]

This is, perhaps, the fullest account of the ornithological doings at Vienna last year that has yet been issued. It commences with a report on the ornithological exhibition which was opened from the 4th to the 14th of April, and which, besides living birds, contained several series of mounted specimens and skins from different quarters. Amongst them M. Oustalet calls special attention to a collection from the Caucasus, presented by Prince Rudolph to the Ornithological Union of Vienna, and to a collection from Ecuador, formed by Baron Gabriel de Gunzberg during his recent travels in that country in company with M. Wiener. He also alludes to the "Polar group" of birds, amongst which were exhibited the specimens procured by Dr. Bernhard Fischer during Count Hans Vitczek's expedition to Jan-Mayen Island. In the intervals of the séances of the subsequent Ornithological Congress, which lasted from the 6th to the 10th of April, and of which M. Oustalet gives a very full account, visits were made by him, in company with Messrs. Steindachner and Pelzeln, to the Menagerie at Schönbrunn, the Imperial Museum of Vienna, and to the private collection of the Prince of Cobourg. M. Oustalet, in concluding his excellent report, takes the opportunity of calling the attention of the Minister of Public Instruction to the three following points :—

1. The want of any good modern work on the birds of France.

2. The inordinate way in which the small birds are destroyed in France, to the serious detriment of agriculture.

3. The importance of collecting further information on the origin of our domestic animals.

For urging these three subjects on the attention of the authorities, M. Oustalet will, we are sure, receive the cordial thanks of every member of the B. O. U. But in some instances we think that M. Oustalet goes too far in his general defence of nearly every species. In extolling the supposed benefits conferred by the House-Sparrow, and especially their vast utility in the United States, he writes of a date no more recent than 1869, and is evidently in complete ignorance of the entire revulsion of feeling in America as regards this bird. For him all the voluminous literature on the Sparrow question, and the general consensus of opinion that it is an unmitigated evil, not only in America, but also in New Zealand, has apparently been written in vain. On the other hand, we quite agree with M. Oustalet and with M. Cretté de Palluel that the Golden Oriole, generally condemned in France as a bird destructive to fruits, especially to cherries, really feeds both itself and its young during the summer almost exclusively on insects. We were sorry to see this notion, which we must consider a grave error, sanctioned and propagated by one of the new groups of birds in the British Museum of Natural History, where a male Golden Oriole is mounted, bearing two cherries to his mate, which is sitting on her nest.

The injury inflicted on many species of birds by the numerous lines of telegraph-wires which now stretch across Europe is incontestable; but, for all that, we cannot abolish aerial lines. One use of electricity, which M. Oustalet mentions, is new to us. It appears that in some parts of France a dead tree is encircled with a band of copper connected by a wire with a battery, and when the branches are covered with birds a shock is administered which makes them fall like ripe fruit. The selection of a dead tree by the proprietor is intelligible, and shows that although on sporting he is bent, he has a frugal mind; but the reason for choice of a dead tree by the perchers is less obvious.

19. '*Ornis*,' Vol. I. No. 1.

[Ornis: Internationale Zeitschrift für die gesammte Ornithologie. Organ der permanenten internationalen ornithologischen Comité, herausgegeben v. Dr. R. Blasius und Dr. G. v. Hayck. 1 Jahrg. 1885. 1 Heft. Wien.]

The first number of our newly founded contemporary—the only one that has yet reached us—is occupied mainly by two Reports. The first of these, drawn up by the two Editors, gives an account of the mode of formation of the permanent International Ornithological Committee and of the work done by it, especially as regards the cooperation of additional members in all parts of the world and of the proceedings of these members. The second is a Report by Dr. Chr. F. Lütken upon the observations made in 1883 at some eight or nine different observing-stations in Denmark.

20. *Ramsay on new Birds from New Guinea.*

[Notes on Birds from Mount Astrolabe, with Descriptions of two new Species. By E. P. Ramsay. Extr. from vol. x. pt. 2, Proc. Linn. Soc. N. S. W.]

A small collection of birds from Mount Astrolabe contained, besides examples of several other species new to the locality, specimens of the two new Paradise-birds proposed to be called *Lophorina superba minor* and *Parotia lawesi*. The former differs from *L. superba* only in its smaller size, the latter from *P. sexpennis* mostly in slight tints of coloration. Mr. Ramsay states that feathers of *Xanthomelus aureus* occur in native head-dresses from S.E. New Guinea.

21. *Ramsay on a new Australian* Collyriocincla.

[Description of a new Species of *Collyriocincla* from the Scrubs in the Vicinity of Cairns, Queensland. By E. P. Ramsay. Extr. from vol. x. pt. 2, Proc. Linn. Soc. N. S. W.]

The species is named, after its discoverer, *C. boweri*. It is "quite distinct."

22. *Reischek on New-Zealand Ornithology.*

[Notes on New Zealand Ornithology. By A. Reischek: communicated by Dr. Hector. Trans. & Proc. New Zealand Inst. vol. xvii. p. 187.]

Mr. Reischek, who had previously had seven years' experience in New-Zealand ornithology, made an adventurous expedition in April 1884 to Dusky Sound and the adjoining "Alps." He gives us some interesting notes on the birds met with, such as *Apteryx australis* (which he found breeding, incubation being performed by the male), *A. oweni* (also found breeding), *Eudyptes pachyrhynchus*, and *Stringops habroptilus*. The last named is purely nocturnal in its habits; the young are very fat and "delicious food when roasted in the camp-oven."

23. *Ridgway on certain* Dendrœcæ.

[A Review of the American "Golden Warblers." By Robert Ridgway. Proc. U.S. Nat. Mus. 1885, p. 348.]

This is a useful synopsis of the difficult group of *Dendrœcæ* * allied to *D. æstiva*, of which the author recognizes seven species, besides subspecies. A new subspecies is *D. bryanti castaneiceps* from Western Mexico.

24. *Ridgway on the Nomenclature of some North-American Birds.*

[Some emended Names of North-American Birds. By Robert Ridgway. Proc. U.S. Nat. Mus. 1885, p. 354.]

Mr. Ridgway gives a list of 77 names of North-American birds, which "represent new or hitherto unpublished combinations," and have been adopted by the Committee on Classification and Nomenclature of the American Ornithologists' Union, together with their previously employed equivalents. One of them, "*Callipepla californica vallicola*," designating the form of *C. californica* from the interior valleys of California, is now proposed for the first time, the *Lophortyx californicus brunnescens* (Ridgw. Pr. Biol. Soc. Washington, ii. p. 94) being a synonym of the typical form, which is confined to the western side of the coast-range.

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* Mr. Ridgway writes *Dendroica*. But if, as we believe, the derivation of this name is δένδρον and οἶκος or οἰκέω, the term should be written *Dendrœca*.

25. *Salvadori and Giglioli on new Woodpeckers.*

[Due nuove specie di Picchi raccolte durante il viaggio intorno al mondo della pirofregata Magenta. Descritte da T. Salvadori ed E. Giglioli. Atti R. Accad. Sci. Torino, vol. xx.]

The Woodpeckers described are *Iyngipicus frater,* from Malacca, and *I. waltersi,* from Formosa. The specimens have been submitted to Mr. Hargitt, who agrees with the authors that the species are new.

26. *Seebohm's 'British Birds and their Eggs.'*

[A History of British Birds, with Coloured Illustrations of their Eggs. By Henry Seebohm. Parts V. & VI. Royal 8vo. London: 1885.]

The concluding portion of this work reached us just too late for notice in our previous issue, otherwise we should have been the first to congratulate Mr. Seebohm on the completion of his labours. We have from time to time expressed our favourable opinion of the illustrations and of the general aim of the work, although want of space and other considerations have hitherto precluded any extended notice; but the Parts now before us may be treated more fully.

As heretofore, the systematic arrangement adopted by Mr. Seebohm is on somewhat independent lines. Part V. commences with the family Charadriidæ, in which are comprised not only Plovers, but also the Scolopacidæ. These are followed by the Laridæ, Alcidæ, Colymbidæ, Procellariidæ, Podicipedidæ, Anatidæ, and concluded by the Pelecanidæ. An Appendix, treating of Mr. Seebohm's new species of Wren from St. Kilda, named *Troglodytes hirtensis,* about which we have heard so much, followed by an Introduction entitled "The Historians of British Birds," Indexes, &c., and brief—too brief—lists of Errata et Addenda complete the work.

Mr. Seebohm shows to less advantage when playing the iconoclast among what he is pleased to term "pseudo-genera" than when describing the habits of those species with which he has become personally acquainted during his extensive experiences in the field. As regards the latter the interest of these Parts is fully on a level with that of their predecessors. Mr. Seebohm's powers of observation are well known to be keen, his ear for the notes of birds is almost unrivalled, and his descriptive renderings are often extremely happy. Take, for instance, that of the Scaup:—"if you imagine a man with an exceptionally harsh, hoarse voice screaming out the word *scaup* at the top of his voice, some idea of the note of this Duck may be formed." Among the rising generation of ornithologists there must be many who have not yet read, either in the pages of this Journal or in Mr. Dresser's 'Birds of Europe,' the graphic description of the finding of authenticated eggs of the Grey Plover and the Little Stint by the author and his companion, Mr. Harvie-Brown. Full details of these acquisitions will be found in Part V. On the other hand, turning to the systematic arrangement, we are at a loss to understand Mr. Seebohm's reasons for beginning his Charadriidæ with *Hæmatopus,* followed by *Charadrius, Cursorius, Glareola, Himantopus* (for the Avocet *and* the Black-winged Stilt), *Phalaropus,* and so on through the Scolopacidæ. It is, of course, a matter of opinion, but we think that Mr. Seebohm is, in the main, unjust in the remarks in his Introduction (p. xiv) as to the blindness of ornithologists (worthy of the name) to the theory enunciated by Darwin and the intergradation of species. The tone of many of the footnotes is also to be regretted, and in future years the author will probably agree with us upon this point. In fact, in his Introduction, he already offers an apology to those whom he may have offended in his "endeavours to cover with ridicule and contempt the two great errors of the wanton multiplication of genera and the capricious change of generic and specific names." If those whose toes have been trodden upon during Mr. Seebohm's erratic gambols in pursuit of that *ignis fatuus* which he calls truth, felt a conviction that he at least had attained to it, they would, doubtless, allow his virtuous motives to stand him in good stead; but, as it is, we fear that they are still unconvinced that he is numbered with the elect, and remain impenitent as to their freely imputed errors. For, to cite his own words:—"The days of authority in science as well as in religion are past. Modern students look for arguments, not opinions; what they want are facts, and they will be grateful to any writer who provides them."

Without entering upon matters of detail, we may remark that the last two parts of Mr. Seebohm's work show some signs of haste. Errors in proper names (Mr. Seebohm is no respecter of persons) and inaccuracies in descriptions of localities are not unfrequent; while some of the generalizations appear to be rather rash. As an instance of the latter, Mr. Seebohm says that "the slightly spotted egg of the Puffin is an exception to the almost universal rule that eggs laid in holes are unspotted white; but the faintness of the spots suggests the idea that the bird has comparatively recently adopted the habit of breeding in a hole, and is consequently gradually losing its power of depositing coloured spots on its eggs. The colour-glands are probably disappearing, according to the well-known law of 'degradation from disuse.'" This is extremely hypothetical, and the modern student wants "facts, not opinions." The richly marked eggs of the Black Guillemot are frequently deposited in crevices beyond the reach of light; so are, in a somewhat less degree, those of the Razorbill. And, again, the remark as to the eggs of the Puffin would apply still more forcibly to those of the Little Auk, about which Mr. Seebohm makes no similar remarks. All the Procellariidæ lay eggs of a pure white, with, at most, a few minute reddish freckles, and, except in size and thickness of shell, there is no difference in this respect between the egg of the little Storm-Petrel and the gigantic White Albatross; but the former is hidden in holes, the latter placed on a raised open nest. What idea does this suggest to Mr. Seebohm? He has been unfortunate in his assertions that "the young in first plumage of the Fulmar Petrel appear to have been undescribed," and that "it is not very creditable to British ornithologists that such should be the case"; for this plumage was distinctly described in the fourth edition of 'Yarrell's British Birds' (vol. iv. p. 5), a year before Mr. Seebohm wrote the above. Nor is it quite correct to say that the only regular British breeding-place of the Fulmar is in the St. Kilda group, for the bird has been stated, on good authority, to breed for the past seven years, and in rapidly increasing numbers, on Foula, one of the Shetlands. On the other hand, the reported breeding in Skye, which Mr. Seebohm cites from Gray's 'Birds of the West of Scotland,' published some fourteen years ago, is admittedly an error. As to the information that "the Cormorant is intermediate in size between a Duck and a Goose" (p. 655), we may fairly ask *which* Duck and *which* Goose? We read with amazement (p. 559) that "*mallard* is a French word meaning drake, in contradistinction to *canard,* which means duk" [sic]. With reference to the feminine gender, the French equivalent for "duck" is *cane*; and although *mallard* is undoubtedly a French word, it means a *millstone,* and nothing else (*vide* Littré)!

To paraphrase Mr. Seebohm's own strictures on Messrs. Baird, Brewer, and Ridgway (p. 611), he is sometimes sceptical where he ought to be credulous, and credulous where he ought to be sceptical. The statement that there is no instance on record of the nesting of the Scaup in this country, seems tantamount to saying that he so utterly disbelieves in Mr. A. C. Stark's detailed account (Pr. R. Phys. Soc. Edin. vii. p. 203) of the identification of this bird and its eggs on Loch Leven, as to deem it unworthy of notice. He doubts the occurrence of the Gadwall so far north as Archangel, although Mr. Harvie-Brown has told us that there is an example in the museum of that town—not absolute proof, it is true; but he unhesitatingly accepts Henke's statement that the Harlequin Duck is "a rare summer visitor to Archangel," which is far more improbable, and is unsupported by any evidence whatever. Of the Harlequin Ducks said to have been killed in Britain, he says that "the example about which no reasonable suspicion lingers, was killed in Aberdeenshire in 1858," although it is notorious that the specimen, whatever it may have been, no longer exists; while Mr. Whitaker's Filey-killed bird, which any one may see, and which has, at least, as good a pedigree, is classed with those of which he says "the evidence of their authenticity or identification is far from being satisfactory." Again, Steller's Eider is considered to have "very slender claims to be regarded as a British bird;" and even the record of the Filey-Brigg one is only admitted in a cold way as "probable," because stragglers have occurred at Heligoland, although the species is known to be an annual winter visitor to Norwegian waters, and the specimen in question is in the possession of Lord Scarsdale, the brother of its fortunate captor.

Our remarks have extended to greater length than we intended, and yet there is much more that might be said. We are sure that Mr. Seebohm, who has been so unsparing in his criticisms of others, will receive these mildly-worded comments in the same good-humoured manner as they are penned, for there would be no pleasure in bowls if they were not associated with rubs.

27. *Sharpe and Wyatt on the Hirundinidæ.*

[A Monograph of the Hirundinidæ, or Family of Swallows. By R. Bowdler Sharpe and Claude W. Wyatt. Part I. September, 1885. London: Sotheran & Co.]

We welcome with pleasure the first number of a new monograph proceeding from the joint labours of two members of the B. O. U. With Mr. Sharpe, we believe, the Swallows have long been a favourite group, and have lately been the subject of special study for the tenth volume of the Catalogue of the Birds in the British Museum. Mr. Wyatt is, as will be universally acknowledged, clever with his pencil; and though his pictures may not quite come up to the standard of the best ornithological draughtsmen of the present day, they are certainly nicely designed and sufficiently well coloured for all practical purposes.

The present number contains figures of *Hirundo semirufa*, *H. leucosoma*, *H. lucida*, *H. angolensis*, *Psalidoprocne obscura*, and *Hirundo striolata*, all Æthiopian species, except the last, of which the letterpress is not yet given. We venture to think our friends should not place too much reliance on the localities given in Rochebrune's 'Birds of Senegambia,' which we see quoted in several places, for, as we have already pointed out*, Dr. Rochebrune's statements are, in some cases, so extraordinary that they tend to discredit his authority in other matters.

28. *Waterhouse on the Dates of Publication of Gould's Works.*

[The Dates of Publication of some of the Zoological Works of the late John Gould, F.R.S. Compiled by Frederick Herschel Waterhouse, A.L.S., Librarian to the Zoological Society of London. 8vo. London, 1885: R. H. Porter.]

This will be a useful pamphlet for all those who possess copies of Gould's works or have occasion to refer to them. An interesting biographical sketch of the great ornithologist, reprinted, with slight alterations, from 'Nature,' is prefixed. We venture to suggest that a complete list of all Gould's works and papers would have been a desirable addition to it.

29. *Zeitschrift für die gesammte Ornithologie.*

[Zeitschrift für die gesammte Ornithologie, herausgegeben von Dr. Julius von Madarász. Jahrg. 1884–85. Budapest.]

Several of the more important papers published in Dr. J. v. Madarász's new 'Journal of Ornithology,' which have reached us in the way of separate copies, have already been noticed in 'The Ibis.' But we feel that our congratulations are due to the Editor of our newly founded contemporary for the excellent start which he has made, and that attention should be called to some other articles in the first seven numbers now before us. In the first volume Mr. Stejneger shows that *Limicola hartlaubi*, Verr., of Madagascar, is probably not different from *L. platyrhyncha.* Herr Schalow describes (from a coloured sketch and notes of the late traveller Böhm) a new Touracoo, *Musophaga boehmi,* allied to *M. rossæ,* from the country beyond Lake Tanganyika. Dr. A. B. Meyer figures a *Notornis* from the Southern Island of New Zealand, and refers it to the species which he has called *N. hochstetteri*, believing that the bird from the North Island, on a skeleton of which *Notornis mantelli* of Owen was originally founded, must be of a different species. The three specimens of *Notornis* in the British Museum he considers to be likewise referable to *N. hochstetteri*. Dr. J. v. Madarász describes and figures a new *Tetraophasis* (*T. széchenyii*), obtained by the expedition of Graf Béla Széchenyi in Szechuan. The chief article in part 3, for 1885, is an important memoir on the birds collected by Dr. Platen in 1878 in Southern Celebes, from the pen of Dr. W. Blasius. This contains a mass of important observations on 55 species, and gives figures of *Alophonerpes wallacii*, *Cyrtostomus frenatus*, var. nov. *plateni*, *Streptocitta albicollis*, *S. torquata*, and *Ptilopus temmincki*.

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* See 'Ibis,' 1885, p. 322.

XIII.—*Letters, Announcements, &c.*

We have received the following letters addressed to the Editors of 'The Ibis:'—

Sirs,—'The Ibis' for January last (pp. 118, 119) contains some account of a remarkable discovery by Mr. E. M. Brigham as regards the development of the Hoatzin (*Opisthocomus cristatus*), which is said to possess, when first hatched, two pairs of legs, the anterior pair becoming subsequently metamorphosed into wings by suppression of the digits and exfoliation of the claws.

It may be of interest to point out that there is some reason for believing that the young of the Hoatzin was procured in Brazil, and figured more than two centuries ago by George Marcgrav, who, in the capacity of physician, along with Dr. William Piso, accompanied Prince Moritz of Nassau to Brazil between the years 1637–44. Marcgrav, as is well known, made a special study of the fauna of that country, and collected a number of observations, which were published after his death by his friend Piso, in a joint work entitled 'Historia Naturalis Brasiliæ,' printed in folio at Leiden in 1648. The fifth book of Marcgrav's portion of this work, treating of the birds of Brazil, contains (at p. 219) a figure of a four-footed chick, accompanied by the following remarks:—

"Pullus gallinaceus monstrosus, magnitudine pulli recens exclusi. Caput habebat anaticum, superius tamen magis in acumen desinens; rostrum anaticum latum, cujus superior extremitas deorsum inflexa: ocellos parvos, collum breve: alas parvulas juxta priora crura positas: quatuor crura gallinacea: carebat pectore, quippe eo loco quo pectus esse debebat duo crura habens, quodlibet superius tres quadrantes digiti longum, inferius quadrantem: & in singulis quatuor digitos gallinaceos. Posteriora duo crura ejusdem figuræ & longitudinis cum anterioribus mire posita erant, sinistrum quidem more naturali, dextrum vero in exortu suo sinistro erat adnatum & quasi sursum vergebat, eo modo quasi duo sinistra crura fuissent, & unum dextrum loco sinistri in exortu fuisset adglutinatum: atque ideo uropygio carebat, quia nullum intervallum inter crura hæc posteriora, & caudæ loco ipsi sinistro cruri exterius longiusculi pili canescentes erant adnati. Pedes habebat gallinaceos & digitos eodem modo dispositos: sed quilibet pes totus inverso ordine positus erat, ita ut inferior pars esset superior & superior inferior, unguiculique etiam sursum non deorsum vergebant. Totum caput, collum, venter, alæ, dorsum & superiora crura non vestiebantur pennis, sed pilis nigris semidigitum longis qui sub ventre & gutture paululum canescebant. In summa plane monstrosus pullus. Crura inferiora & pedes fusci coloris, uti & rostrum, vitalia viscera habebat gallinanacea, sed inordinate disposita. Cor magnum. Vivebat cum excluderetur."

From these remarks it is evident that Marcgrav regarded the bird described by him as a monstrosity, and had no suspicion that any post-natal metamorphosis of the anterior limbs would be likely to take place. Nevertheless it is quite possible that what he supposed to be a young chicken may have been a young Hoatzin, and in the figure which he gives the bill of the bird (if correctly drawn) is quite unlike that of a chicken. It is true that he write "*alas parvulas juxta priora crura positas;*" but there is no trace of any rudimentary wings in the figure, and it is at least unlikely that there would have been *three* pairs of limbs. What Marcgrav mistook for wings, possibly may have been the somewhat longer plumules, or filaments, covering the scapulars. At all events, it seems worth while to direct attention to what may have been an anticipation of Mr. Brigham's observation.

I am &c.,
J. E. Harting.

Sirs,—The first occurrence in England of so great a waif as *Saxicola deserti* may be deemed worthy of record in the pages of 'The Ibis.'

The bird in question was shot between the villages of Easington and Kilnsea, on the Holderness coast of Yorkshire, on the 17th of October last, and forwarded to me as a light variety of *Saxicola œnanthe.* The specimen is a young female, though too much injured to be proved such by dissection, and was exhibited on my behalf by Mr. H. E. Dresser at the Meeting of the Zoological Society of London on the 17th of November, 1885.

Yours &c.,
Wm. Eagle Clarke.

18 Claremont Road, Headingley, Leeds.
Dec. 10, 1885.

The Birds of Corea.—A new field is now open to naturalists in Corea, of the ornithology of which it may be said that absolutely nothing is known. It is evident, from Vice-Consul Cartes's recently published narrative of his journey from Söul to the Phyong-Kang Gold-washings, that there is no difficulty in traversing the country. It is also evident that interesting birds are to be found there, from the subjoined passage in the Vice-Consul's Report:—

"The chain of granite mountains which incloses Söul came to an end on the evening of our first day's march, and brought us into a more picturesque, though less open country. Away to the east lay the Amsan hills, where the King is said to have his hunting-parties, and in which are many fir woods of considerable extent. In one of these was a colony of Egrets, towards which hundreds of birds were finding their way, whose white plumage made their home conspicuous at over two miles' distance. Pheasants were challenging their rivals or calling to their mates on the hill-side; in the paddy-fields which lined the narrow valley a few Herons were standing on one leg, and a pair of Ibises, whose plumage had greatly deepened in tint since autumn, were flushed by the road-side."

Quails near Chipping Norton.—Lord Walsingham sends us the subjoined extract from a letter received from the Earl of Ducie, dated Sarsden, Chipping Norton, Oct. 23rd, 1885:—

"I write to you to inform you of the unusual influx of Quails in this district this year.

"Generally, upon this estate, which is of some 8000 acres, I hear of one or two 'bevies' every year. As I do not shoot Partridges till October, and use no pointers, I rarely see a Quail, though I have killed two or three in the last twenty years well into October. This year my keeper, going out early in September to get a few Partridges, put up, he says, at least thirty Quails in one day. A day or two after he saw several more. I have made inquiry, and find that Quails have been seen and killed in unusual numbers in the district between Chipping Norton and Oxford. At Cirencester and at Evesham I have evidence of them in a similar quantity. A retired Indian civilian, living a few miles from here, and possessing the reputation of an ornithologist, has had several brought to him by farmers and others wishing to know what they were. Even on my property in the vale of Severn the keeper has killed one. There they are almost unknown.

"The district of which I write is the upland country of the Oolite, and has the highest July isotherm in the United Kingdom."

Progress of Mr. H. O. Forbes.—We extract from the 'Pall Mall Gazette' the subjoined account of Mr. H. O. Forbes's progress in New Guinea:—

"The High Commissioner's ship 'Governor Blackall,' leaving Sydney on the 15th of August, arrived at Port Moresby on the 28th. Some delay was necessary for final despatches, and for assisting Mr. H. O. Forbes, so well known for his explorations in the Malay Archipelago, in his proposed journey to New Guinea. The passage from Cooktown was finished in thirty-eight hours, the fastest on record over this unfrequented sea.

"The harbour of Port Moresby may claim its name from the protection of the barrier-reef, which prevents any heavy seas doing damage. Even with this safeguard, however, it may more truly be called a roadstead, the inner, or Fairfax harbour, being the real haven. But at present the inner harbour is seldom used, for the outer harbour answers general purposes and boasts of the chief settlement. Two long tongues of land almost encircle it, the hills rising up tier upon tier, like an amphitheatre, from a narrow belt of mangrove trees. The hilly nature of the country will always be a great hindrance to the advance of Port Moresby. For many miles inland the whole land is covered with barren sunburnt hills, sparsely covered with a few gum-trees and occasional patches of grass or miserable plantations of bananas. Such poor soil can never be valuable for grazing or cultivation, and, except as an outlet for produce of the interior, Port Moresby can never be a great centre.

"Mr. Forbes is going to attempt to reach the summit of Mount Owen Stanley, 13,205 feet high, and hitherto untrodden by the foot of man. He was unfortunate in losing many stores and damaging instruments by the sinking of a lighter at Thursday Island, which delayed his arrival for some time. Sir Peter brought him over to New Guinea, and his carriers, thirty Malays, are following in the 'Herbert.' Mr. Forbes will form a depot-camp at Sogeri, twenty-five miles inland, and survey, collect specimens, &c., in the neighbourhood of the lower ranges. Next spring, when the weather will be suitable, he will make the attempt to climb to the highest point. He may spend several years in New Guinea, for his wife is following him, and his heart is thoroughly in his work."

Nesting of Batrachostomus.—In Dr. F. Kutter's lately published paper on the breeding of Bornean Birds (Journ. f. Orn. 1885, p. 338) will be found a very interesting account of the nest and eggs of *Batrachostomus cornutus,* of which figures are also given (tab. iv.). This bird makes a slight flat nest on the branch of a sugar-palm (*Arenga saccharifera*) or other tree, and lays a single pure-white egg. The nest is composed mainly of the bird's own feathers mixed with a little moss and grass. The allied forms *Podargus* and *Ægotheles* are also known to lay colourless eggs.

News from Diego Garcia.—Mr. G. C. Bourne, whose departure for Diego Garcia was announced in our number for July last (see Ibis, 1885, p. 340), has arrived safely at that distant spot, but does not give us much reason to hope for new discoveries in the bird-life of that hitherto unexplored islet, although there is no doubt that he will reap an abundant harvest in other branches of zoology. Writing on the 30th October last, Mr. Bourne tells us that he had only found one true land-bird in Diego Garcia. This is said to have been introduced from Mauritius, and, according to his description, must be a Weaver-bird of some species. Four kinds of Tern appear to be common and to breed in the island, besides which there are two or three species of Boobies or Gannets (*Sula*). At the date of his letter Mr. Bourne had not seen any species of Tropic-bird (*Phaethon*), but had been informed of its occasional occurrence. Mr. Bourne's first consignment of specimens is expected to arrive very shortly.

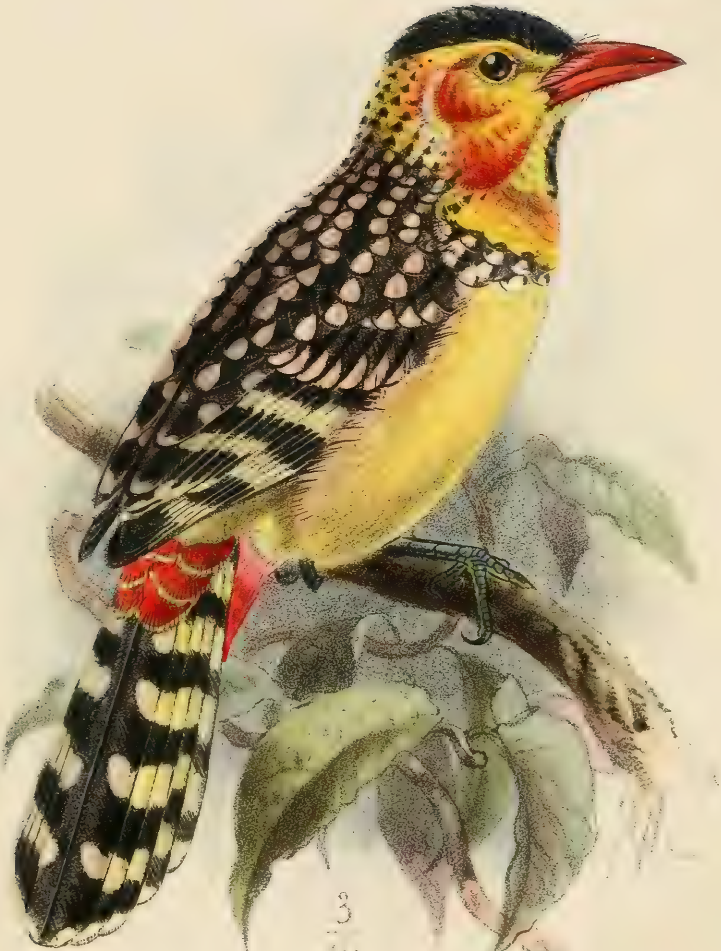
New Ornithological Works in Progress.—Dr. A. B. Meyer of Dresden has in preparation a monograph of the European Grouse and their various local forms, which will be illustrated by about ten folio coloured plates, to be prepared by the well-known zoological artist G. Mützel. The work is dedicated to the Crown-Prince Rudolf of Austria.

Mr. H. E. Dresser is at work on a monograph of the Rollers, to form a companion volume to the 'Bee-eaters,' of which the last part is now in the press. About thirty species of Rollers are known to science, of all of which Mr. Dresser will give coloured figures.

A new 'Check-list of North-American Birds and Code of Nomenclature' is announced as nearly ready for publication. This is the report of the Committee of the American Ornithologists' Union, appointed two years ago to consider the Classification and Nomenclature of North-American Birds. It will consist of two parts—(1) the Code of Nomenclature recently adopted by the A. O. U., and (2) a List of North-American Birds drawn up on the principles of this code. It will make an octavo volume of about 300 pages.

Dr. W. L. Buller, as has been already announced (Ibis, 1885, p. 240), is preparing for the press a new and enlarged edition of his 'History of the Birds of New Zealand.' It will be issued in about ten large quarto parts, with coloured figures by Keulemans. Dr. Buller, we believe, is himself coming over to this country early in the year as one of the Commissioners to the Colonial Exhibition at South Kensington, and will, no doubt, take this opportunity of commencing the work.

Ibis 1898. Pl. V.



Keulemans lith. [illegible] imp.

TRACHYPHONUS SHELLEYI.

THE IBIS.

FIFTH SERIES.

No. XIV. APRIL 1886.

XIV.—*On a new Species of Barbet of the Genus* Trachyphonus. By Dr. G. Hartlaub.

(Plate V.)

When I read the description of *Trachyphonus erythrocephalus* in Capt. Shelley's paper on the Birds of Somaliland (Ibis, 1885, p. 394), I came to the conclusion that the Somali bird did not belong to that species. Capt. Shelley having kindly lent me one of the specimens, I have been able to compare it with the type of *Tr. erythrocephalus* in the Berlin Museum; and finding my suspicions justified, I now propose to describe the Somali bird as

Trachyphonus shelleyi, nov. sp. (Plate V.)

Pileo subcristato nitide nigro, nitore nonnullo chalybeo, plumulis ex aurantiaco miniatis, macula minuta nigra terminatis, postice circumdato; gutture et capitis lateribus necnon superciliis flavis; regione malari et parotica diffuse coccinea, macula minore sericeo-alba; nuchæ plumulis flavis, macula apicali nigra; gutturis nota subangusta, longitudinali, irregulari, nigra; fascia infragutturali haud circumscripta, dilute ex aurantiaco rubente, infra plumis nigris albo-guttatis marginata; interscapulio, dorso, alarum tectricibus scapularibusque in fundo nigro maculis subtriangularibus albis, distincte roseo-lavatis; tergo immaculato cinerascente, uropygio pallide flavo; supra- et infracaudalibus coccineis; remigibus nigris, albofasciatim maculatis; subalaribus albidis; rectricibus nigris, mediis maculis 5–6 marginalibus subrotundatis albis, lateralibus fasciis 5–6 subflavescenti-albis; abdomine pectoreque dilute et minus pure flavis; rostro rubello, pedibus nigris, iride fusca (♂). Long. tot. circa 18 cent., culm. 21 mill., al. 81 mill., caud. 85 mill., tars. 21 mill.

Trachyphonus erythrocephalus, Shelley, Ibis, 1885, p. 394 (nec Cab.).

As Capt. Shelley had not been able to examine the type of *Trachyphonus erythrocephalus* in the Berlin collection, it is easy to understand that he believed the Somali specimen to be identical with the above-named East-African species, discovered by Mr. T. M. Hildebrand at Kitui, a locality in Ukamba. The two birds closely resemble each other, the style of coloration being the same in both; but there cannot be the slightest doubt about their specific difference. The differential characters are the following:—

1. The new Somali species is more distinctly crested than *Tr. erythrocephalus,* in which, however, this character is not altogether wanting.

2. The Somali bird is decidedly smaller, as the following measurements will show:—

	Tr. shelleyi. mill.	*Tr. erythrocephalus.* mill.
Culmen . . .	21	26
Wing	81	97
Tail	86	90
Tarsus	20	26

3. The white spots on the mantle, scapulars, and wing-coverts are conspicuously shaded with a rosy hue in the Somali bird, whereas they are yellowish white in *Tr. erythrocephalus.*

4. The shape of these same spots is subtriangular in the Somali bird, round and drop-like in *Tr. erythrocephalus.*

5. In this latter species the bright red colour of the head occupies the whole of its sides, broadly bordering the black

cap and including the eyebrows; in the Somali specimens the red colour is restricted to a much smaller space, the eyebrows, margin of the forehead, and remainder of head and neck being yellow, shading into a lighter red on the nape, ear-coverts, and hinder portion of the cheeks. The silk-white ear-spot is the same in both birds.

6. The black longitudinal mark running down the middle of the throat is very narrow and rather irregularly shaped in the Somali bird; it is fully and regularly developed and increases in breadth towards the lower end in *Tr. erythrocephalus.*

7. The white spots and bars of the black tail-feathers are differently shaped in the two species, being much more regular and on a smaller scale in the Somali bird.

The only specimen of *Tr. shelleyi* obtained, was shot by Mr. Lort Phillips on the plateau of the interior of Somaliland. Three others were seen by him.

The well-defined and exclusively African genus *Trachyphonus* comprises two groups, in which the style of coloration is rather different.

a. Seven species: supra fasciatæ et maculatæ.

1. TRACHYPHONUS CAFFER, Vieill.

Le Promepic, Levaill. Prom. p. 77, t. 32; Marsh. Monogr. p. 139, pl. 67, opt. (synon.); Sharpe's ed. Layard, p. 178; Barb. Ornith. d'Angola, p. 109; E. Holub & v. Pelz. Beitr. Orn. Südafr. p. 162; Shelley, Ibis, 1882, p. 249 (T. S. Jameson: South-east Afr.); G. A. Fischer, Zeitschr. ges. Ornith. i. p. 372; id. Cab. Journ. 1885, p. 125; Schalow, Orn. Samml. R. Böhms, &c., p. 10.

South Africa: Natal, Transvaal, &c. Very common north of Pretoria, all along the Limpopo river, *Buckley*; West Africa, Huilla (Mossamedes), *Anchieta.* East Tette, *Kirk*; Kakoma (5° 47′ S. lat., and 32° 29′ E. long.), *Böhm*; Nguru Mountains in Masai, *G. A. Fischer.*

In Messrs. Marshalls' Monograph two specimens of this species are mentioned, obtained by Sir John Kirk (Livingst.

Exped.) at Tette, both "much smaller than the southern bird, and somewhat differently coloured. Is this difference due to age?" All I can say is that the measurements taken by Dr. Reichenow of a specimen of *Tr. caffer* from Kakoma (5° 47′ S. lat.) correspond exactly with those taken by me of a Cape specimen in the Bremen collection. Wing 100 mill., tail 95 mill., culmen 20 mill.

2. TRACHYPHONUS MARGARITATUS, Rüpp.

Bucco margaritatus, Cretschm. Rüpp. Atl. t. 20.

Tamasia erythropyga, Ehrenb. Symb. Phys. t. vii.

Capito margaritatus, Goff. Mus. Pays-Bas, Buccon. p. 67; Heugl. Orn. N.O.-Afr. p. 764; Finsch & Hartl. Ostafr. p. 506 (syn.); Marsh. Monogr. t. 57; Finsch, Trans. Zool. Soc. vii. p. 281; Oustal. Somal. Miss. Révoil, Ois. p. 7; Salvad. Ucc. dello Scioa, p. 70.

Restricted to the warmer portions of N.E. Africa and East centr. Africa (south of 18° N. lat., *Heugl.*; of 16° N. lat., *Brehm*); Bogosland, Adail and Danakil coast, *Rüpp.*, *Heugl.*, *Brehm*, *Antinori*. Not to be found in the more southern districts on the White Nile, where *Tr. arnaudi* takes its place. Never observed near Ladò by Emin Bey. Common in all lowland localities, from the coast to Shoa: *Antinori*.

Salvadori states that the black throat-spot is wanting in the female, but is constantly present in the younger bird.

3. TRACHYPHONUS ARNAUDI, Prév. & Desm.

Micropogon darnaudi, Prév. & Desm. in Lefebr. Abyss. Ois. p. 133; Heugl. Ornith. N.O.-Afr. p. 765; id. Ibis, 1861, pl. 5.

Trachyphonus squamiceps, Heugl. System. Uebers. no. 482.

Capito squamiceps, Goff. Mus. Pays-Bas, Buccon. p. 20; Marsh. Monogr. pl. 58; Hartl. Abhand. nat. Ver. Brem. vii. p. 113.

Western coast of the Bahr-el-Djebel, between 7°–9° N. lat.: *Heuglin*. Upper White Nile: common about Ladò, whence Dr. Emin Bey has sent many specimens.

No difference in the colour of the sexes.

Note.—Most of the figures in Marshalls' Monograph are very good; but the letterpress accompanying them is not equally meritorious. For instance, we read in the Latin diagnosis of this species, "subtus squamatus," and in the description "entire head black"!

4. TRACHYPHONUS BOEHMI, Fisch. & Reich.

Trachyphonus boehmi, Fisch. & Reich. Cab. Journ. f. Orn. 1879, p. 342 ("*Tr. squamiceps,* Heugl."); Schalow, ibid. 1883, p. 346 ("*Tr. margaritatus,* Rüpp."); Cab. Journ. f. O. 1878, p. 240 ("*Tr. arnaudi,* Prév. & Dum."); G. A. Fischer, ibid. 1885, p. 125; id. Uebers. Vög. Masail. in Zeitschr. ges. Orn. i. p. 371.

Pare, Aruscha in the Masai country, *G. A. Fischer*; "common from Mkaramo to Mossiro," *G. A. Fischer*; Uniamwesi, *Böhm*; Taita and Ugogo, *Böhm,* Mus. Berol.; Barawa, South Somali coastl. (2° N. lat.), *G. A. Fischer*: Abdul Gindi, Mus. Paris (*fide* Oustalet).

Three specimens of this fine species are before me:—*a.* Adult, sex unknown; Barawa, Nov. 11. *b.* Adult male; Mrumi in Ugogo: *Böhm,* Sept. 1, 1880. *c.* Male, not quite adult; Pare: *Fischer.*

The following is a description of the adult bird from Barawa:—

> *T.* pileo subcristato nigro, immaculato; capitis et colli lateribus gulaque læte sulphureo-flavis, nigro minutissime maculatis; plumulis nonnullis supraciliaribus flavo-rubentibus; collo postico, interscapulio, alarum tectricibus scapularibusque in fundo pallide fuscescente maculis parvulis rotundatis flavescenti-albidis, strictissime nigro-limbatis; tergo, uropygio et supracaudalibus dilute flavis; rectricibus fuscis, supra albo-maculatis, subtus albo-fasciatis; scutello gutturali magno subrotundato chalybeo-nigro; pectore et epigastrio flavis, maculis minutissimis nigris rarius notatis; fascia pectorali interrupta e plumis nigris macula apicali rotundata alba ornatis composita; abdomine inferiore pallidius flavescente; subcaudalibus coccineis; rostro pallente corneo; pedibus nigricantibus. Long. circa 172 mill., culm. 17 mill., al. 76 mill., caud. 88 mill.

In this specimen the spots and bars of the tail are very regular and sharply defined; the reddish colour over and under the eye is very faint; the round drop-like whitish spots of the notæum are not very large and distinctly flavescent, especially the spots and bars of the tail; the black guttural shield does not extend over the throat.

Two specimens. Pare (Masai), Sept. 3: *Dr. Fischer. Mas jun.* Long. tot. 75 mill. Iris dark red; beak horn-colour.

Very much like the bird from Barawa, but on the pale sulphur-yellow of the abdomen we see short bar-like darker marks formed by the apical margins of the feathers; the white spots and bars of the tail are distinctly yellowish; the sides of the head and throat shaded with reddish; over the eyes some reddish feathers like little flames; the guttural shield is indicated by an irregular black spot; spots and bars of the tail very regular and circumscribed.

Three specimens. Adult male. Mrumi (Ugogo): *R. Böhm,* Sept. 1. Long. tot. 19 mill., al. 80 mill., culm. 19 mill., caud. 80 mill.

In this interesting specimen there are some more important differences from the Barawa bird. The marginal spots of the tail-feathers are small and of a dirty white with an almost imperceptible yellowish shade; the dark bars of the underside of the tail are broader, less defined and shaded into grey towards their upper margin; abdomen of a dirty yellowish white without any spots or bars; the large black guttural shield extends upwards to the chin; the white spots of the wing-coverts and scapulars are *short, broad, and bar-like,* those of the interscapulium are smaller, more rounded and drop-like.

Perhaps this Ugogo bird ought to be separated as a constant variety or race.

Tr. boehmi is nearly allied to *Tr. arnaudi,* but differs from it:—1, by the crown of the head being of a uniform glossy black, whereas in *Tr. arnaudi* its feathers are provided with black tips, leaving only an irregular and more or less invisible black spot in the middle of the crown; 2, the black-tipped feathers of the sides of the head are sulphur-yellow, they being of a reddish orange in *Tr. arnaudi*; 3, by the large and circumscribed guttural steel-black scutellum, of which there are only irregular traces in *Tr. arnaudi*; and 4, the infra-pectoral fascia formed by black feathers with a large white spot at the tip, so conspicuous in *Tr. boehmi*, is but feebly and most irregularly indicated in *Tr. arnaudi*.

5. TRACHYPHONUS VERSICOLOR.

Tr. versicolor, Hartl. Zweit. Beitr. Orn. östl. Aequat. Africa, in Abhandl. naturw. Ver. Bremen, vii. p. 208; id. Ornith. Centr. Bl. 1882, p. 91; id. Cab. Journ. f. Orn. 1882, p. 326.

Tarrangolé: *Emin Bey*.

Very fine and adult specimens of both sexes are in the Bremen collection. They are as yet the only ones known.

Tarrangolé is a station on the Chor Kohs in Lattuka, 4° 28′ N. lat.

Diagn.—Valde affinis *Tr. erythrocephalo*, sed diversus statura multo majore (240 mill.!), rubedine capitis multo minus extensa et subcaudalibus pallide et pure flavis.

In the *female* of this species the black crown of the head and the black longitudinal guttural stripe are wanting, the feathers of the crown being pale reddish with black bar-like spots; nape more intensely spotted with red and black; the red colour of the sides of the head a little more extended than in the male; the bars of the tail somewhat narrower.

6. TRACHYPHONUS ERYTHROCEPHALUS.

Tr. erythrocephalus, Cab. Journ. f. Orn. 1878, pp. 206, 218, 240, pl. 2. figs. 1 and 2.

Kitui (Ukamba, East. Afr.), 2°–3° S. lat., *Hildebrand*.

Adult specimens of both sexes and young birds are in the Berlin Museum.

7. TRACHYPHONUS SHELLEYI, Hartl.

The high plateau of the interior of the Somali country: *Lort Phillips*.

b. Two species: supra concolores.

8. TRACHYPHONUS PURPURATUS.

Tr. purpuratus, J. Verreaux, Rev. et Mag. de Zool. 1851, p. 260; Strickl. Contrib. to Orn. 1851, p. 135; Hartl. Syst. Orn. Westafr. p. 175; Marsh. Monogr. p. 151, pl. 68.

Capito purpuratus, Goff. Mus. Pays-Bas, Buccon. p. 71; Reichen. Cab. Journ. f. Orn. 1875, p. 9 (descript. ad. et jun.): Oustalet, Nouv. Arch. du Mus. sér. 2, p. 68; Cass. Proc. Ac. N. Sc. Philad. 1859, p. 140.

Gaboon, *J. Verr.*; Doume on the river Ogowé, *Marche*; Camma and Moonda river, *DuChaillu*; Cameroons, *Reichen.*

9. TRACHYPHONUS GOFFINI, Schleg.

Capito goffini, Schleg. Mus. Pays-Bas, Buccon, p. 72; Sharpe, Ibis, 1869, p. 386 ("*Tr. purpuratus*"); H. T. Ussher, Ibis, 1874, p. 55; Sharpe, Ibis, 1870, p. 473; id. Catal. Afr. Birds, p. 16; Büttikofer, Zool. Res. in Liber. p. 218; Marsh. Monogr. pl. 67, p. 150.

Gold Coast, *Nagtglas*; Denkera, *Ussher*; Fantee, *Sharpe*; Soforé, Liberia, *Büttikofer.*

P.S.—The existence of three species of *Trachyphonus* in the Somali country is curious and apparently improbable; but I believe nevertheless that such is the fact. Heuglin and Révoil, both trustworthy observers, have collected *Tr. margaritatus* in the northern coastlands of Somaliland; and as to this latter species, Dr. Oustalet writes me that the specimens collected by Mr. Révoil are identical with Abyssinian specimens in the Paris Museum. In the southern portion of the Somali coast (Barawa, &c.) this species is represented by *Tr. boehmi*, which extends into the Masai country, Ugogo, and Uniamwezy; and *Tr. shelleyi*, our new species, inhabits the interior highlands of the Somali country.

XV.—*Notes on Woodpeckers.*—No. XI. *On a new Species from Arizona.* By EDWARD HARGITT, F.Z.S.

IN pursuing my study of the Picidæ, I happened to meet with a specimen of an adult male from the Santa Rita Mountains, Arizona Territory, which was named *Picus stricklandi*, and upon comparing it with an example of an adult male of true *P. stricklandi* from Jalapa, Vera Cruz

(De Oca), in the collection of Mr. Sclater, I was surprised to find the two birds perfectly distinct, the Arizona species having the back uniform, and the bird from Jalapa having the back barred with white. In this paper I shall endeavour to show which is the true *P. stricklandi* of Malherbe, and to prove that the Arizona bird is fully entitled to specific rank.

Malherbe (Revue Zoologique, 1845, p. 373) described, under the title of *Picus* (*Leuconotopicus*) *stricklandi*, a bird which he considered to be a young female, and in his Monograph he stated that he had seen a specimen of the adult male in the British Museum; also an adult female in a collection sent to Mr. Wilson of Philadelphia, and a young male in the Darmstadt Museum. The type specimen had the back banded with white; and Malherbe asserts that it is a young bird, and that the bars disappear with age. The specimen is certainly not fully adult, because in adult plumage the breast is spotted, whereas in the type, as described and figured by Malherbe, the breast is striped; but, judging by analogy, the bird could not be a very young one, or the top of the head would be red, as in the young male of the Arizona species; and it is quite wrong to say that the white bars disappear with age, because, as the specimen in Mr. Sclater's collection shows, the fully adult has also the back barred. Malherbe, in his Monograph, gives descriptions of the four examples seen by him, and he commences with that of the adult male, taken from the British Museum specimen. This bird, the habitat of which is stated on the label to be "Mexico," has the red occipital band without any red on the crown, and is undoubtedly an adult bird; but it has the back uniform, and I take it to belong to a species entirely distinct from *P. stricklandi*. The next specimen described by the author is that of an adult female, which he says only differs from the adult male in wanting the red occipital band; we may therefore conclude that the back is uniform, as in the British Museum specimen, and that it belongs to the same species. The young male is next described; and this, according to Malherbe, differs in many respects from the adult male, the chief point of difference consisting in the feathers of the crown being tipped with red, the occiput being also red, in the young; he also states that it has the back as in the adult male, but browner and paler. There can be no doubt that the latter is a young bird, and as the back is like that of the adult male (uniform), it belongs to the same species; but if, as Malherbe endeavours to make out, all these specimens belong to his *P. stricklandi,* why has not the young male a barred back? seeing that it is a younger bird than his type specimen, as is proved by the former having the crown red, whereas in the latter it is not so. One would expect the young of both sexes to be alike, and it surely could not be that the young male would have a uniform back, and the young female of the same species would have the back barred. In my opinion two species have been confounded, viz.:—*Picus stricklandi* of Malherbe, which is a bird having a barred back, and of which an immature female served as the type, and another species in which the back is uniform in all stages of plumage, and from which Malherbe's descriptions of the male adult, female adult, and young male have been taken.

This author, in his Monograph, plate xxviii. fig. 4 ♂, has allowed his artist to indicate white transverse markings on the lower back. If this is intended, as I should imagine, to represent the British Museum specimen, it is faulty, as in that bird the back is uniform. Fig. 5, on the same plate is evidently taken from the type specimen, judging by the striated breast, although the author does not state it to be so.

Mr. W. Brewster, in 'The Auk' for April 1885, describes some birds from Arizona, amongst them being what he terms *Picus stricklandi,* from the Santa Rita Mountains, and he points out that the young of both sexes have the crown red; but he makes no mention of any barrings on the upper parts, and it is well known that in the fully adult of the Arizona species the back is uniform. Therefore I think it cannot be doubted that, as in *P. stricklandi* of Malherbe, the adults (and, judging by the plumage of the type specimen, the younger bird also) have the upper parts barred with white, whereas in the Arizona bird the back is perfectly uniform in both old and young, they belong to different species. I therefore propose for the latter the name of *Picus arizonæ*, the diagnosis of which will be as follows:—

P. similis *P. stricklandi,* sed dorso uniformi nec albo-fasciato distinguendus.

Hab. In montibus "Santa Rita" dictis, in Arizona. Ex typ. in mus. nostr.

XVI.—*A Review of the Species of the Genus* Cursorius.

By Henry Seebohm.

Twenty years ago the genus *Cursorius* was reviewed by Dr. Hartlaub (P. Z. S. 1866, p. 61); yet, notwithstanding the numerous collections of African birds which have since that date found their way to London and Berlin, our knowledge of the species of this interesting group had advanced but little until the visit of Mr. E. Lort Phillips to Somali-land, in the winter of 1884–85, added a new species to the list.

The Coursers form a group of about a dozen species of birds which are intermediate between the Pratincoles and the Lapwings, and probably almost as closely allied to the Bustards on the one hand and the Plovers on the other. The Lapwings and Plovers, like the Sandpipers, Snipes, and other birds belonging to the same family, have the nasal orifice placed in a groove or ditch which extends for some distance beyond it; but in *Otis, Cursorius,* and *Glareola* there is no nasal groove, the nasal orifice being placed in a depression not more elongated than itself. From *Otis, Cursorius* may be distinguished by its scutellated tarsus, and from *Glareola* by its having neither a forked tail nor a hind toe.

The Coursers are desert birds, and feed upon the insects that are found upon sandy plains. It is therefore not surprising that most of the species are confined to Africa. The range of the genus *Cursorius* extends, however, northwards into Palæarctic Africa, and eastwards through Syria, Arabia, and Persia to India and Ceylon.

It is unnecessary to repeat the synonymy of each species, which remains very much in the same condition in which it was left by Dr. Hartlaub; but the lapse of twenty years has added something to our knowledge of geographical distribution which is worth recording. I have also endeavoured, in every case, to give an absolute diagnosis of each species, without increasing the length of my paper by adding other details of description.

1. Cursorius somalensis, sp. nov.

I cannot agree with Capt. Shelley that the example of the Somali Courser obtained by Mr. Lort Phillips (Shelley, Ibis, 1885, p. 415) represents merely a local race of the Cream-coloured Courser*. It appears to me to be a good species, which may be diagnosed as having the *hind head slate-grey* (like *C. gallicns* and *C. rufus*), but the *axillaries* and *under wing-coverts greyish buff* (instead of nearly black). It further differs from *C. gallicus* in the following particulars:—It is a much smaller bird, the wing measuring 5·3 inches instead of from 6·0 to 6·3 inches; nevertheless it appears to have longer though more slender legs, the tarsus measuring 2·3 inches instead of from 2·1 to 2·3 inches. The colour of the back and wing-coverts is much darker. The subterminal black bands on the tail are twice as broad, and are also traceable on the centre tail-feathers. Finally, the black margins of the inner webs of the secondaries scarcely occupy a fifth part of the web instead of more than half.

The species is only known from a single example; but Mr. Lort Phillips states that it was fairly common in small flocks throughout the plateau.

2. Cursorius gallicus.

The Cream-coloured Courser has the *axillaries* and *under wing-coverts nearly black*, and the *outer web of the secondaries buff*. No other Courser fulfils both these conditions. The nearly black axillaries and under wing-coverts are found even in young in first plumage, showing the importance of the character; but the slate-grey hind head and the black belly are characters which only appear after the first moult. The buff outer webs of the secondaries are, however, found at all ages.

* [" *Cursorius gallicus somalensis*, subsp. n.; subspecific race," are Capt. Shelley's exact words.—Edd.]

It breeds in the Canary Islands, the whole of North Africa, and in Arabia, Persia, Beluchistan, the Punjaub, Sind, and Rajputana. It does not breed north of the Trans-Caucasian steppes, but occasionally strays into Europe.

3. CURSORIUS RUFUS.

Burchell's Courser combines the two characters of having the *hind head slate-grey* and of having *dark brown* or *black* on the *belly*; but as neither of these characters appear in young in first plumage, it is safer to diagnose the species by the pattern of colour on the secondaries, which is constant at all ages. The middle secondary is white, with the basal two thirds of the outer web and the basal third of the inner web brown.

This species is confined to South Africa, where it is found in the Transvaal, Natal, and the Cape Colony.

4. CURSORIUS SENEGALENSIS.

Lichtenstein's Courser is the only species of the genus which has a *black belly*, but *neither white upper tail-coverts nor a slate-grey hind head.* However, as the first and last of these characters are only found in adult birds, a second diagnosis is necessary, which will also apply to the young in first plumage. This is easily found in the unique pattern of the secondaries. The white is shaped like a thin wedge, the base of which runs out at the tip, whilst the thin end splits the brown of the inner web almost into halves.

This species has an extensive range in the Ethiopian Region from Senegambia in the west to Kordofan in the east and the Cape Colony in the south.

5. CURSORIUS COROMANDELICUS.

The Indian Courser, at the first glance, looks little more than a large form of Lichtenstein's Courser; but when carefully examined, it presents many important points of difference besides that of size. It is the only Courser that combines the two characters of *white upper tail-coverts* and *black under wing-coverts*. As both these characters are found in the young in first plumage, a second diagnosis is not necessary.

It appears to be generally distributed throughout India and Ceylon; but it is more local in the south, and does not occur in the extreme north-west.

6. CURSORIUS CHALCOPTERUS.

The Bronze-winged Courser is the only species in the genus which shows the metallic colours frequently found on the plumage of the Lapwings and occasionally on that of the Wattled Lapwings. The *tips of the primaries for about half an inch are bronzed with green and red.* According to Heuglin this character is also found in the young in first plumage.

This species has a wide range, from Senegambia in the west to Kordofan in the east, and to Damara Land and Natal in the south.

7. CURSORIUS CINCTUS.

Heuglin's Courser is nearest allied to Levaillant's Courser and its local races. These two species are the only Coursers which have no white on the secondaries beyond a narrow margin. In the former the secondaries are brown, but in the latter chestnut-buff. This character is probably constant at all ages. A more complicated diagnosis is:—*Upper tail-coverts white; primaries nearly uniform dark brown, without buff inner webs, or large white patches, or bronze tips.* No other Courser answers to this description.

Heuglin obtained it on the Upper Nile. I have an example in my collection procured by Andersson at Ondonga in Damara Land, and Mr. Lort Phillips found it in Somali-land.

8. CURSORIUS BICINCTUS.

9. CURSORIUS BICINCTUS BISIGNATUS.

10. CURSORIUS BICINCTUS GRACILIS.

Levaillant's Courser, and the two local races, which do not appear to be more than subspecifically distinct from it, and which we may call respectively Hartlaub's Courser and Fischer's Courser, may always be recognized by the *chestnut-buff inner webs* of their *inner primaries and secondaries.* The typical form holds a position intermediate (at least in colour) between the other two. It is a resident in South Africa as far north as Damara Land and the Transvaal; but as Heuglin records an example from the White Nile (though the exact locality is doubtful) it may also occur throughout Central Africa.

Hartlaub's Courser is only a pale form of Levaillant's Courser and is also slightly smaller. The feathers of the upper parts are margined with nearly white instead of buff, and the ground-colour of the underparts shows the same difference. It inhabits Benguela, meeting the typical form in Damara Land, where intermediate forms are found.

Fischer's Courser was discovered by the traveller whose name it bears, in Massai-land in Eastern Equatorial Africa (Journ. f. Orn. 1884, p. 178), and has recently been procured a little to the north-east by Mr. Lort Phillips in Somali-land (Shelley, Ibis, 1885, p. 416). Like Hartlaub's Courser, it is slightly smaller than the typical form, but varies from it in the opposite direction. The buff shade is so dark that it approaches pale chestnut, and the white of the upper tail-coverts is suffused with buff. On the other hand, it resembles Hartlaub's Courser in having the dark shaft-lines on the throat less distinct, becoming almost obsolete on the upper throat.

11. CURSORIUS BITORQUATUS.

Jerdon's Courser is the only species of this genus which combines the characters of having a *plain brown mantle* and *patches of white near the tips of the first three primaries.*

It appears to have a very limited range, having only been found in that part of the Indian peninsula which lies between one hundred and three hundred miles due north of Madras.

12. CURSORIUS ÆGYPTIUS.

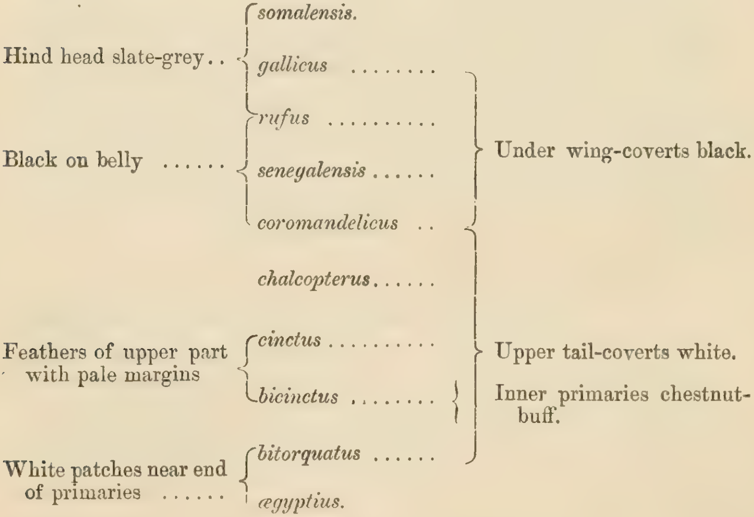
The Black-backed Courser may always be recognized by its *plain black mantle and scapulars.*

It inhabits West Africa and the valley of the Nile.

It has been placed by most writers in a genus by itself

(*Pluvianus*), probably in consequence of its frequenting the muddy banks of rivers, like the Ringed Plovers; but there seems to be no valid reason why it should not remain in the genus in which Wagler placed it. It agrees with *C. senegalensis* in having a shorter tarsus than usual, and with *C. bitorquatus* in having white bands across some of the primaries. It also agrees with the latter species in not having the claw of the middle toe pectinated; but examples of *C. senegalensis* also occasionally show no trace of this peculiarity *.

In order to show the mutual relationship between the species of this genus and also some of the more prominent differences in the adults, I have constructed a diagram which serves as a key to the species, more simple and concise, though conveying more information, than those in ordinary use :—


Hind head slate-grey . .
Black on belly . . . . . .
Feathers of upper part with pale margins
White patches near end of primaries . . . . . .
somalensis.
gallicus . . . .
rufus . . . .
senegalensis . . . . . .
coromandelicus . .
chalcopterus . . . . . .
cinctus . . . .
bicinctus . . . .
bitorquatus . . . . . .
ægyptius.
Under wing-coverts black.
Upper tail-coverts white.
Inner primaries chestnut-buff.

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* A recent reviewer, in 'Nature,' of Professor Newton's excellent article on Ornithology in the 'Encyclopædia Britannica,' finds fault with the learned writer on account of his unfavourable criticism of Sundevall's 'Tentamen.' If the Swedish ornithologist's treatment of the group of birds commonly called Limicolæ be a fair sample of the whole work, one can only come to the conclusion either that the anonymous reviewer was unacquainted with

It is not surprising that even such a compact interlaced genus as *Cursorius* should have had its share of ill usage at the hands of the "splitters"; but it seems to me that the only natural mode of subdivision is to regard the Coursers with a band across the breast as one group, leaving the remainder to form another group, each containing five species.

The ancestors of the latter of these groups were probably resident in the Mediterranean subregion during the last Interglacial Period. During the cold winters of the Glacial Period which followed, one party emigrated to India, and are now represented by *C. coromandelicus*. A second party emigrated to South Africa and became *C. rufus* and *C. senegalensis*, the former in the south and the latter in the west; whence, after the two species became differentiated, the latter gradually extended its range until it overlapped that of the former. The third party, instead of emigrating, adopted migratory habits, though not on a very extensive scale; and *C. somalensis* is probably the result of a small migratory party which overshot its mark and finally settled in Somaliland. The three tropical species (the two Ethiopian and the one Oriental) have probably altered least in appearance, as they have altered least in climate and habits, whilst *C. gallicus* has altered most.

Precisely in the same way the banded Coursers that have the most southerly range have altered least, whilst the only one (*C. ægyptius*) which ranges into the Palæarctic Region has altered most.

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those birds, or that he was ignorant of Sundevall's classification of them. *Cursorius ægyptius* is absolutely placed in a different family to that which contains its nearest allies. It appears in the family Charadriinæ, with the incorrect character "tarsi reticulati," whilst the other Coursers are placed in the family Otidinæ, and are correctly described as being provided with "tarsis transv. scutatis." A systematist who relies solely on external characters ought at least to describe them correctly. The verdict of posterity will probably be that Sundevall's classification of birds is a literary curiosity and nothing more.

XVII.—*A Review of the Species of the Genus* Scolopax.

By Henry Seebohm.

The Snipes are a very interesting group of birds, not only to the sportsman, but also to the ornithologist. Few birds give better sport in the field, and few genera are capable of being made a better text from which to preach an ornithological sermon on the new point of view from which the subject must be regarded, now that the theory of the evolution of species is generally accepted.

The Snipes belong to the family Charadriidæ, which also includes the Sandpipers, Curlews, Plovers, and a few other allied genera. From all these birds they are very easily and very distinctly characterized. Most of the Charadriidæ are partially web-footed; they have a distinct web at the base of the toes, sometimes much more developed between the outer and middle toe; but the Snipes, some of the Sandpipers, and the Turnstones are exceptions to this rule, having no rudimentary web between any of the toes, which are all cleft to the base. Again, most of the Charadriidæ have comparatively long legs and short bills; the Snipes, on the contrary, have short legs and long bills. The only birds in this family (except the Snipe) in which the bill is as long or longer than twice the length of the tarsus are the females of one or two species of Curlew, and one or two species of Sandpiper, none of which have all the toes cleft to the base. The genus *Scolopax* may therefore be diagnosed as follows:—

Charadriidæ having the bill twice as long as the tarsus, and all the toes cleft to the base.

The Snipes are the only birds in the family which combine both characters; the diagnosis is therefore perfect, including all the species which belong to the genus *Scolopax,* and excluding every other bird.

The genus *Scolopax* may, however, be diagnosed almost more simply as:—Charadriidæ having the tarsus shorter than the middle toe and claw, and with parti-coloured tail-feathers.

It is quite possible to construct other diagnoses of this genus which, if more complicated, are nevertheless founded upon characters of equal importance; but enough has been said to show what a good genus *Scolopax* is. To split up such a sharply defined well-characterized genus into four or five ill-defined badly-characterized genera is surely both unnecessary and unwise. Like every other genus it may easily be divided into subgeneric groups, because the gaps between the species are not of exactly the same width. A coincidence so remarkable seldom or never occurs.

Most ornithologists recognize the two groups of Snipe and Woodcock as generically distinct, but they probably do so because they are unacquainted with the intermediate forms which connect them. The three species of European Snipe have many characters in common which distinguish them from the Woodcock.

1st. In the Snipes the tibia is bare of feathers for a considerable distance, whilst in the Woodcocks it is feathered to the joint. This diagnosis would make the species of Woodcocks to be eleven in number.

2nd. In the Snipe the number of tail-feathers is usually fourteen or more, whilst the Woodcock has only twelve. If the species were divided upon this character, the Jack Snipe must be added to the Woodcocks, and six of the other eleven Woodcocks must be removed to the Snipes.

So much for what are called structural characters; but by bringing characters founded upon colour to the rescue, we find other differences, as we shall see in the sequel, of obviously greater generic value.

3rd. The bold black markings on the heads of the Snipes begin at the base of the bill and are longitudinal, whereas in the Woodcocks they are confined to the hind head and are transverse. This character excludes the Jack Snipe once more from the Woodcocks, and confirms the removal of the six species excluded by the second character, thus reducing the Woodcocks to five species.

4th. The tail-feathers of the Woodcock have curious silvery white tips, of which no trace is to be found in the

Snipe. This character confirms the five species mentioned in the last paragraph as the only true Woodcocks.

5th. The primaries of the Snipe are uniform in colour, whilst those of the Woodcock are barred. This character excludes three out of the five Woodcocks, but admits two other species, neither of which possesses any of the four previous characters, so that it may be dismissed.

6th. The eggs of the three species of European Snipes, and those of several species of African and American Snipes, closely resemble each other, and differ widely from those of the European and American species of Woodcocks. The eggs of several species of both groups are unknown, but the eggs of one at least of the two Snipes which the fifth character would determine to be Woodcocks exactly resemble, except in size, the eggs of the latter group.

Other minor points might be mentioned, but enough has been pointed out to show that Nature has drawn many lines between the Snipes and the Woodcocks, but unfortunately she has not drawn them in the same place. Two conclusions may be arrived at from the foregoing facts. One of these is that the characters of the Woodcocks and the Snipes are so closely interlaced that no ornithologist attempting classification on scientific principles would be likely to advise the subdivision of such a natural group as the genus *Scolopax*. The other conclusion requires consideration at greater length.

Some ornithologists not only separate the Woodcocks generically from the Snipes, but further subdivide each of these groups. These writers have adopted a theory that what they call structural characters are of generic value, whilst they regard differences of colour as only of specific value. In accordance with this notion, they have placed the American Woodcock and the Jack Snipe in distinct genera, because in the former some of the primaries are remarkably attenuated, and in the latter the bill and the sternum are slightly exceptional, regardless of the facts that the American Woodcock is apparently more nearly related to the European Woodcock than either of them are to the Moluccan Woodcock, and that the Jack Snipe and the

Common Snipe are obviously nearer related to each other than either of them are to the Imperial Snipe of Colombia. All generic distinctions must be genetic distinctions, otherwise they are of no value. The theory that structural characters only are of generic value, is either based upon the presumption that they date further back than characters founded upon difference in colour and pattern of colour, or it is an antiquated, unscientific, and absurd hypothesis.

The Snipes and their nearest allies furnish some remarkable instances in which it is impossible to believe that differences of structure date as far back as differences of colour. The Painted Snipes (*Rhynchæa*) * of South Africa, India, China, and Australia are precisely alike in colour. It is not known that the males from any of these localities can be distinguished from each other in any way. Gould's supposition that the Painted Snipe from Australia has a shorter foot than the others appears to be unfounded, now that a large series of each have been examined. Nevertheless there seems to be unimpeachable evidence that the females of the Australian birds differ from those of Africa, India, and China in having the trachea elongated and convoluted in a remarkable manner, somewhat similar to that to be found in certain Cranes, Swans, and Geese. These birds may or may not be regarded as generically distinct from their respective allies; but be that as it may, no one can imagine that the common ancestors of the African and Australian Painted Snipes differed in colour from their two groups of descendants, and that consequently the two latter have independently developed a perfectly similar series of colours complicated in character, and differing to an unusual degree with age and sex. During the period which must have elapsed before the convolutions of the trachea could either have been lost in the African birds, produced in the Australian birds, or modified by each of them in opposite directions from an intermediate ancestral form, it seems as if the colour, with all its complications of pattern and variations with age and sex, must have remained unchanged. The Jack Snipe is another case in point. Notwithstanding the fact that its bill has become considerably modified from the typical Scolopacine form, and that, unlike any other Snipe, it has two instead of only one notch on each side of the posterior margin of the sternum, it has retained the longitudinal markings on the head which proclaim it a Snipe and not a Woodcock, as well as the peculiar colour and pattern of the dorsal plumage which are common to most species of both groups, whilst in the coloration of the tail it differs far more from the Snipes than they do from the Woodcocks.

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* The position which Sundevall has assigned to this genus—between *Ibidorhyncha* (which is a slightly modified Oystercatcher) and *Numenius*—is one of many similar cases which amply justify Professor Newton's unfavourable criticism of that over-estimated systematist.

In dividing the Snipes from the Woodcocks there cannot be much doubt that the natural line is that laid down by our third character and confirmed by the fourth, both characters being founded on differences of pattern of colour. It can scarcely be denied that in the Snipes, at all events, differences in the pattern of colour are of older genetic date, and therefore of higher generic value than so-called structural differences; and that those ornithologists who maintain the contrary are advocating a hypothesis inconsistent with the theory of the evolution of species.

The geographical distribution of the Snipes is most remarkable, few genera of birds being so nearly cosmopolitan as the genus *Scolopax*. In the Arctic Regions both of the Old and of the New World Snipes breed beyond the Arctic Circle: in Norway, under the influence of the Gulf-stream, as far as 70° N. lat. No true Snipe is known to breed in Australia (the eggs attributed to the Australian Snipe are undoubtedly those of the Australian Painted Snipe); nor is any Snipe known to breed in any of the South Pacific islands, with the exception of the Auckland and Chatham Islands, south of New Zealand. No true Snipe breeds in the Oriental Region, except at great elevations in the Himalayas; but, after the breeding-season, India, the Malay Peninsula, and Australia are visited by enormous numbers of these birds. Otherwise the Snipes are cosmopolitan, breeding in Europe, Asia, Africa, and in both North and South America.

1. Scolopax rusticula.

Our Woodcock is a semi-arctic bird ranging from the Atlantic to the Pacific. In Scandinavia it breeds up to lat. 67°, in West Russia to 65°, but in East Russia and Siberia not much beyond 60°. Its southern breeding-range extends to the Azores, Canaries, Madeira, the Alps, Carpathians, and Caucasus, to the Himalayas (where it breeds at an elevation of ten thousand feet), and to Mongolia and the mountains of Japan. It has not occurred in Iceland or Greenland, and only once on the Faroes; but accidental stragglers, no doubt driven westward by storms, principally from the Azores, have been met with on the American continent in Newfoundland, New Jersey, and Virginia.

2. Scolopax minor.

The American Woodcock may be recognized at once by the extraordinary attenuation of its first three primaries, and by its unbarred primaries and underparts. The pattern of the colour of the upper parts is very similar to that of our bird, to which it is evidently very closely allied. Its range extends northwards to lat. 50°, and southwards into Texas, but its longitudinal range extends from the Atlantic only halfway across the continent. To the northern half of its range it is only a summer visitor; but in the southern half it is a resident, the numbers of which are largely increased during winter. There can be little doubt that it is the result of an ancient western emigration from the Old World.

3. Scolopax saturata.

The Javan Woodcock is a resident in the island the name of which it bears, and where it breeds at an elevation of 7000 feet. It is evidently the result of a southern emigration of our bird, caused by the freezing-up of its breeding-grounds in the east by the snow of the Himalayas. The Javan Woodcock is smaller than our bird, but has a larger bill and a more rounded wing. The first primary is half an inch shorter than the second, and there are no bars on any of the primaries.

4. Scolopax rochusseni.

The Moluccan Woodcock is confined to the small group of islands the name of which it bears, whither it probably emigrated from Japan. It is larger than our bird, and though its primaries are barred, it has no bars on the breast or under tail-coverts.

5. Scolopax rosenbergi.

The Papuan Woodcock is a resident in New Guinea. It resembles the Javan Woodcock in being smaller than our bird, with a longer bill and unbarred primaries, but it resembles our bird as well as the Moluccan species in having the first and second primaries nearly equal in length.

These five species may fairly be regarded as forming a subgeneric group to which the name of Woodcocks may be applied. They seem to be more nearly related to each other than to any of the other species in the genus, though the next group presents so many points of similarity that the homogeneous character of the genus *Scolopax* is well preserved.

The Snipes which are most nearly allied to the Woodcocks are presumably the seven species which have the tibia feathered almost to the joint of the tarsus. They further resemble the Woodcocks in having the claw of the hind toe remarkably small, and the base of the bill remarkably deep, though neither of these characters are capable of very clear definition. It is necessary to coin a name for this group of seven species, and I propose to call them Semi-Woodcocks.

6. Scolopax nemoricola.

The Wood-Snipe appears to be entirely confined to India and Burma, breeding at high elevations in the Himalayas from Nepal to Assam, migrating in autumn to winter in hilly districts further south in those countries. The nearest allies of this species are, strange to say, *S. jamesoni* and *S. imperialis* from the American Andes. The three species have the whole of the underparts profusely barred, and the outer web of the first primary plain brown like the inner web. The Asiatic species is distinguishable at a glance by the broad buff dorsal stripes, which are almost obsolete in its South-American allies, as well as by its smaller size (wing under 5¾ inches instead of over 6 inches).

7. Scolopax solitaria.

The Himalayan Solitary Snipe breeds at an elevation of from 10,000 to 15,000 feet, from Turkestan north-east as far as the Altai range, and south-east in the Himalayas as far as Assam, descending in autumn to winter in the lower valleys. Its nearest ally is scarcely more than subspecifically distinct from it, and probably interbreeds with it somewhere in South-east Siberia; but it has also a very close ally in *S. stricklandi,* which inhabits the forests of Patagonia. These three Semi-Woodcocks differ from the other three of which mention has been made in having traces of pale bars on the outer web of the first primary, and on both webs of some of the inner primaries and secondaries. They are further distinguished by the almost entire absence of bars on the centre of the belly. The Himalayan Solitary Snipe may be distinguished by its pure white lower breast.

8. Scolopax solitaria japonica.

The Japanese Solitary Snipe breeds in Northern Japan, and probably in South-eastern Siberia as far east as Lake Baikal. It winters in China, though a few remain all the year round in Yezo. It has hitherto been generally confounded with the preceding species, the synonymy of the two forms being still more confused. The *Scolopax hiemalis* of Eversmann (Bull. Soc. Mosc. 1845, p. 257, pl. vi.), from the Altai Mountains, is unquestionably the Himalayan bird. The *Gallinago japonica* of Bonaparte (Compt. Rend. 1856, p. 715) is apparently a *nomen nudum* without description of any kind, and may belong to any of the half-dozen Snipes of Japan. It therefore must be allowed to drop altogether out of the synonymy, leaving the coast perfectly clear for the adoption of Swinhoe's *Gallinago japonica* (Ibis, 1873, p. 364), of which the type is now in my collection. The differences between the Himalayan and Japanese Solitary Snipes may be expressed as follows:—

Scolopax solitaria.	*Scolopax japonica.*
Lower breast white, with no bars.	Lower breast white, barred with brown.
Pale dorsal stripes very broad.	Pale dorsal stripes very narrow.
Primaries marbled towards the tip.	Primaries plain throughout.

Japanese examples appear to be constant, as are all the Turkestan examples that I have seen; but in India slightly intermediate forms are found.

9. SCOLOPAX STRICKLANDI.

Strickland's Snipe is said to be a forest bird, inhabiting Chili and Patagonia. It resembles the two preceding species very closely, but may be distinguished in a moment by the fact that wherever they are white it is buff in colour.

10. SCOLOPAX JAMESONI.

Jameson's Snipe is a resident in the mountain plateaux of the northern Andes, where it breeds at an elevation of ten or twelve thousand feet, in Colombia, Ecuador, Peru, and Bolivia. In appearance it is somewhat intermediate between its two allies *S. nemoricola* and *S. imperialis*. It agrees with the former in the general colour of its plumage (which might almost be called grey when compared with the rich chestnut so characteristic of the latter), whilst it resembles its near neighbour in the size of its bill—3½ inches instead of 2¾ inches.

11. SCOLOPAX IMPERIALIS.

The Imperial Snipe is only known from a single Bogotá skin which looks like a rufous phase of the last-mentioned species, within the limits of the range of which it was found.

12. SCOLOPAX AUCKLANDICA.

The Auckland Snipe has occurred in New Zealand near the town of Auckland; on the Chatham Islands, rather less than a thousand miles to the south-east; and on Auckland Island, rather more than a thousand miles to the south-west. It is probably a mere coincidence that its island life has dwarfed it exactly to the size of a Jack Snipe. In every other respect it is a Semi-Woodcock, and occupies an intermediate position between the two groups into which they are naturally divided. It agrees with one of them in having no traces of bars on the outer web of the first primary, and with the other in having the centre of the belly uniform in colour.

This concludes the group of Semi-Woodcocks, all the species of which differ from the true Woodcocks and agree with the Eastern Palæarctic Snipes in having sixteen or more tail-feathers, some of the outer of which are considerably attenuated.

The typical Snipes are connected with the Woodcocks by two South-American species which possess characters apparently somewhat intermediate. In their large size, thick bills, barred primaries, and pale slightly spotted stone-coloured eggs they resemble the Woodcocks; but in the longitudinal marks of the head, in their tibiæ bare of feathers for some distance above the joint, and in their well-developed claw of the hind toe they are typical Snipes. Probably the resemblance to the Woodcocks is only accidental, that is to say, one of analogy rather than of affinity; though it is quite possible that it may be a case of reversion to the characters of a common ancestor. With the exception of the legs and feet, which resemble those of the typical Snipes, they look like giant forms of some species of Semi-Woodcock. The two forms only appear to differ in size, and are probably only subspecifically distinct.

13. SCOLOPAX UNDULATA.

The Cayenne Giant Snipe is only known from the mountains of Guiana, and is somewhat smaller than its next ally.

14. SCOLOPAX UNDULATA GIGANTEA.

The Brazilian Giant Snipe has been obtained near the course of the Paraná and near Buenos Ayres. Its reported occurrence in Peru and Cayenne may possibly be correct, but the evidence is scarcely conclusive. The two forms differ as follows:—

	S. undulata.	*S. gigantea.*
	in.	in.
Wing	6–6½	6¾–7
Bill	4–4¼	4½–5
Tarsus	1⅞	2¼
Middle toe	2½	2⅝

Probably a large series of examples would show that the two forms completely intergrade. In both forms several of the outer feathers of the tail (which is supposed to consist of only fourteen feathers) are attenuated.

We must now take into consideration a very important group of typical Snipes, the *crême de la crême* of the genus—possibly the most highly developed, because showing the least trace of Woodcock blood and the closest relationship amongst themselves. Although there are ten of them, they vary so little that they must be regarded as having had a common origin at a comparatively recent date. But perhaps the most remarkable fact connected with them is their geographical distribution, which may throw considerable light upon the anomalies already pointed out in the distribution of the Semi-Woodcocks.

Ten species inhabit Africa south and east of the Great Desert; three breed in Eastern Siberia; and the remainder are natives of South America, principally the south and west of that continent. These facts can only point to one conclusion—that the original colony was in East Siberia, and that when the Glacial epoch drove them out of that region some emigrated east to the west coast of South America, whilst others wandered westwards to the east coast of Africa.

15. SCOLOPAX STENURA.

Of the three East-Siberian species the Pintail Snipe is the smallest (wing 4·9 to 5·3 inches), with the greatest number of tail-feathers (twenty-four), and with the outer half-dozen or so on each side the most attenuated (about ·1 inch in width). It breeds as far north as the Arctic Circle, from the valley of the Yenesay to the Pacific. It is doubtful whether it breeds as far south as the valley of the Amoor, but it winters in India, China, and the islands of the Malay Archipelago.

16. Scolopax megala.

Swinhoe's Snipe is a slightly larger bird (wing 5·4 to 5·6 inches), with rather fewer tail-feathers (twenty), and with the outer four or five on each side not quite so much attenuated (about ·2 inch in width). It breeds in South-eastern Siberia from Lake Baikal to the north island of Japan, and, passing through China on migration, winters in the islands of the Malay Archipelago.

17. Scolopax australis.

Latham's Snipe is the largest of the three (wing 6·0 to 6·5 inches), with the fewest tail-feathers, and with only two attenuated tail-feathers on each side (about ·2 inch in width). It breeds in both islands of Japan, and passes the Philippine Islands and the coast of China on migration to winter in Australia and Tasmania. These three Snipes differ very slightly in colour; but, though they are very closely related to each other, there seems to be no reason to doubt that they are specifically distinct. Latham's Snipe is, however, still nearer to the Madagascar Snipe and the Noble Snipe of South America.

18. Scolopax nobilis.

The Noble Snipe is only known from the plateaux of the Andes of Ecuador and Colombia. It differs principally from Latham's Snipe in having a shorter because more rounded wing (first primary only exceeding the fourth in length by $\frac{1}{4}$ instead of $\frac{3}{4}$ inch), and by having a longer bill (4 inches or more, instead of 3 inches or less).

19. Scolopax nobilis macrodactyla *.

It is not known that the Madagascar Snipe differs in any way from its Colombian ally except in having fourteen in-

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* It is unusual to give the later name precedence over the earlier one, but in the present case common sense demands that the rule be violated. *S. macrodactyla nobilis* would imply a large variety of the Madagascar Snipe, which would be erroneous; *S. nobilis macrodactyla* means a variety of the Noble Snipe with a larger foot than usual, which is precisely the state of the case.

stead of sixteen tail-feathers*, and on an average a larger foot; but it is doubtful whether the latter character would hold good in a large series. As it is, the difference is so small that, in order to make it as perceptible as possible, it is necessary to measure the foot in the longest possible way, that is, from the joint of the tibia and tarsus to the end of the claw of the middle toe. These dimensions vary in *S. nobilis* from 3·0 to 3·3 inches, and in *S. macrodactyla* from 3·4 to 3·6 inches. So far as is known, the Madagascar Snipe is the only Snipe found on that island, and does not occur on the mainland.

The explanation of the apparently extraordinary fact that two such very closely allied birds inhabit such widely distant localities appears to me to be as follows:—Their nearest relative is unquestionably Latham's Snipe, which occupies a locality midway between them. The latter is a migratory bird, breeding in Japan and wintering in Australia; but there cannot be much doubt that it was once a resident in Japan, nor that a change in the habits of a bird from being a resident to being a migrant with a range of migration covering a distance of five thousand miles soon produced a corresponding change of structure. Its rounded wings and exceptionally long and heavy bill must seriously have impeded its progress, and we may confidently assume that Natural Selection soon lengthened the one to aid its powers of flight, and shortened the other so that it might have less weight to carry. What I wish to be inferred from this argument is the strong probability that Latham's Snipe—before it became a migratory bird—differed scarcely, if at all, from the present condition of its allies in Madagascar and Colombia. The cold of the Glacial epoch not only forced it to winter in Australia, but so reduced the area of its breeding-grounds that large bodies were compelled to emigrate in search of fresh breeding-places, as Pallas's Sand-Grouse did in 1863. It is difficult to say why Latham's Snipe did not stop in Australia and breed there; but there must be something either in the climate or food of that continent which does not suit the true Snipes during the breeding-season, as none of them are known to breed in Australia. Be that as it may, one party of emigrants seem to have flown almost due west to find a suitable home in Madagascar, whilst another must have flown almost due east to secure excellent quarters in Colombia. The birds which founded these two colonies, having discovered situations suitable for both summer and winter residence, probably neither changed their habits nor their structure. Their descendants are probably almost identical in form and colour with the common ancestors of the three forms when they were residents in Japan, and that is probably the explanation of their remarkable similarity at the present day. They have never passed through the ordeal of annual migration or been subjected to the sifting process involved in the non-survival of the least fit to endure the perils of such journeys. The alternative hypothesis that the Japan bird has retained its characters, and that the Madagascan and Colombian species have changed, is open to the objection that it seems impossible that two colonies so remotely situated could have independently varied in the same direction to a similar extent.

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* Even this character appears to be doubtful, as Messrs. S. Roch and E. Newton ('Ibis,' 1863, p. 172) state that the normal number of tail-feathers of the Madagascar Snipe appeared to be sixteen. I have never seen an example in which there were more than fourteen.

There is one very remarkable fact connected with this group of Snipes, and that is that the number of tail-feathers (which is very variable in this genus) appears to vary in distinct connection with geographical distribution, as if it were a climatic rather than a genetic variation. The Snipes inhabiting Europe and Africa have only fourteen tail-feathers (*S. gallinago, S. æquatorialis,* and *S. macrodactyla*); those inhabiting North and South America have sixteen tail-feathers (*S. wilsoni, S. paraguayæ, S. brasiliensis, S. magellanica, S. andina,* and *S. nobilis*), whilst the one inhabiting Asia (*S. australis*) has eighteen tail-feathers. The range of *S. gallinago* also extends to Asia, where it is said frequently to increase the number of its tail-feathers to sixteen. Of the other species of Snipe inhabiting East Siberia, two have twenty tail-feathers, and one as many as twenty-four. This extraordinary development of additional tail-feathers in East Siberia is very remarkable, and is not confined to the Snipes. Two species of Ground-Thrushes, *Geocichla varia* from East Siberia and *G. horsfieldi* from Java (the latter obviously the result of a comparatively recent emigration from the former), are distinguished from all other Thrushes by having fourteen instead of twelve tail-feathers; and the Sea-Eagle of Kamtschatka also stands alone amongst his congeners as the possessor of fourteen tail-feathers. It is perhaps impossible to discover any rational explanation of these curious facts. Modern evolutionists have invented the hypothesis of Sexual Selection to explain those facts which appear to be incapable of explanation by the theory of Natural Selection. It seems impossible to imagine any benefit that could accrue to a species by increasing the number of its tail-feathers; and philosophers will probably explain this curious series of facts by attributing it to the influence of sexual selection, on the same grounds that many a man, not a philosopher, explains an action of which he is unable to give a rational defence, by saying that it was *a whim of his wife !*

20. SCOLOPAX ÆQUATORIALIS *.

By far the handsomest species of Snipe is that which inhabits Africa south and east of the Great Desert; and it is specially interesting because the geographical distribution of it and its allies presents a parallel case to that of the three species just mentioned. The Ethiopian Snipe is remarkable for the clear definition of its markings and the velvety gloss of the black on its upper parts. Evidently it is very nearly allied to the Common Snipe, with which it agrees in having the outer web of the first primary white, and in having the axillaries varying in colour from unspotted white to white regularly and broadly banded with brown; in size, also, it scarcely differs, but it may always be distinguished by the whiteness of its under tail-coverts and outer tail-feathers, and by the narrowness of the outer tail-feather on each side, though the number of tail-feathers is the same (fourteen). The relationship is close; but there cannot be much doubt that the Ethiopian Snipe is specifically distinct from its Palæarctic ally, though the winter range of the latter is said to join the breeding-grounds of the former in Abyssinia. It is worthy of note that the European Snipe is a migratory bird, and has consequently more pointed wings than those of its Ethiopian ally, which is a resident. The Ethiopian Snipe inhabits the east of Africa from Abyssinia to the Cape, and is doubtfully recorded from Benguela and Senegambia on the west.

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* This species is often called *Scolopax nigripennis*, a name given by Bonaparte to a Snipe said to have come from the Cape. He describes the outer web of the first primary as black, whence the name *nigripennis*. As, however, the Ethiopian Snipe happens to be distinguished from the other species which breeds in the Ethiopian Region, and from the species which only winters there, by the fact that the outer webs of its first primaries are *white*, there can be little doubt that the name is a slip of the pen for *albipennis*; but the adoption of either name is, of course, out of the question.

21. SCOLOPAX FRENATA PARAGUAYÆ.

Closely related as are the Common and Ethiopian Snipes, the latter has a still closer relationship to the Chilian Snipe, which is apparently an intermediate form having some of the characters of each. The wings are more rounded than in the one and not so much so as in the other. The shape of the tail-feathers (the outer on each side attenuated) resembles that of the Ethiopian Snipe; but the colour of the under tail-coverts and outer tail-feathers is the same as in the Common Snipe.

The only conclusion that appears probable seems to be that the ancestors of the three forms were once residents round the basin of the North Pole, and that they varied but little from the present East-African and west South-American species. After the Glacial epoch drove them south they became residents in two colonies, one in the eastern hemisphere and one in the western, in both of which they found in the south conditions of life so similar to their former existence that they have scarcely changed, though they have been so long isolated. Both in the Old and in the New

World it appears that many individuals never crossed the line, but, adopting migratory habits, followed the retreating cold almost to their old quarters, and in consequence of their more changed conditions of life have themselves undergone a somewhat greater change, and are now the Common and American Snipe respectively.

The South-American form of the Common Snipe has an extended range, and varies to some extent in consequence. The Chilian Snipe appears to be confined to the highlands of Bolivia, Chili, the Argentine Republic, and Paraguay. In the latter country it meets with a very close ally—

22. SCOLOPAX FRENATA BRASILIENSIS.

The Brazilian Snipe is merely a small form of the preceding (wing 4½ to 5 inches, instead of 5 to 6 inches). Its range extends from Paraguay, through Brazil, to Guiana and Venezuela.

23. SCOLOPAX FRENATA MAGELLANICA.

The Falkland-Island Snipe is merely a pale form of the Chilian Snipe, breeding on the Falkland Islands and near the Straits of Magellan, migrating northwards in autumn along the east coast of South America as far north as Rio de Janeiro. These three Snipes do not differ in length of bill, which varies from 2·4 to 2·8 inches.

24. SCOLOPAX FRENATA ANDINA.

In the Peruvian Andes a Snipe occurs which we may call the Peruvian Snipe, combining the small dimensions of the Brazilian Snipe with a bill of only 2 inches in length.

The last half-dozen species or subspecies of Snipe can scarcely be regarded as more than tropical forms of the Common Snipe. They vary very slightly in colour or pattern of colour, the variation between the species being scarcely greater than those within each species. It is a very remarkable fact that in a genus like *Scolopax,* containing twenty or thirty species distributed almost over the whole world, the variation in colour should be so small; and the fact is all the more remarkable when we discover that within the limits of each species the range of variation is so large that the construction of hard-and-fast diagnoses is very difficult. The Semi-Woodcocks naturally divide themselves into two groups: half the species having the inner and outer webs of the first primary uniform in colour, whilst in the other half the outer web is white or barred with white. The same character appears to be also an important one in the typical Snipes; and, so far as those which inhabit Europe, Asia, Africa, and North America are concerned, it appears to be a fairly constant one; but in South America it breaks down altogether. In the four subspecific forms or local races of *Scolopax frenata* the outer web is sometimes white, sometimes brown, occasionally white on the basal half and brown on the terminal half, and examples occur in which it is white on one wing and brown on the other. The number of tail-feathers is also so variable in many, perhaps in most, of the species that its practical value as a diagnostic character is very small indeed. The extent to which the outer tail-feathers are barred does not vary quite so much as the colour of the axillaries in some species; but the shape of the outer tail-feathers appears to be slightly more reliable. There can be little doubt that the diagnosis of *one or more tail-feathers on each side stiffened and attenuated*, though somewhat vague, would exclude the five Woodcocks and the four typical Snipes yet to be considered, whilst it would include the seven Semi-Woodcocks and the twelve typical Snipes already considered. The importance of the outer tail-feathers as a specific character in this genus becomes obvious when the somewhat startling fact is realized that, if the outer four or five feathers on each side of the tail were cut away in examples of *S. gallinago*, *S. wilsoni*, and *S. paraguayæ*, it would be impossible to guess to which of the three species any one of them belonged.

It may appear an arbitrary and clumsy arrangement; but it is necessary to draw some definite line which will diagnose the four typical Snipes yet to be considered from the twelve preceding species. The two monster Snipes of South America may be dismissed on account of their barred primaries, but the other ten species can only be satisfactorily determined by the width of their outside tail-feathers, which measure ·2 inch or less, whilst those of the four species now to be considered measure ·3 inch or more.

These four species only breed in the Nearctic and Palæarctic Regions, or the Northern Zone; and, with the curious exception of East Siberia, no part of the Northern Zone is inhabited by any other species of Snipe.

25. SCOLOPAX GALLINAGO.

The Common Snipe breeds throughout the whole of North Europe and Siberia, but it is very rare north of lat. 70°, and in the southern portion of its breeding-range it is chiefly confined to mountain-chains. Its range extends west to Iceland and the Faroes, and possibly to South Greenland, and it is said that in both the former localities a few remain to winter. It has been said to breed in Algeria, and is known to do so on the southern slopes of the Alps and in South Russia. Both Severtzow and Scully found it breeding in Turkestan; and Prjevalsky says that a few remain to breed in South-east Mongolia. It is a winter visitor to the basin of the Mediterranean and to North Africa, as far south in the west as the Azores, Madeira, the Canaries, and the valley of the Gambia, and in the east as far as the southern shores of the Gulf of Aden. In Asia it winters in Persia, India, Ceylon, the Andaman Islands, and Burma. It has once occurred on the Malay Peninsula, but it passes regularly along the coasts of Japan on migration to winter in China, Formosa, and the Philippine Islands.

26. SCOLOPAX GALLINAGO WILSONI.

A comparison of a large series of skins of the North-American Snipe with a still larger series of examples of the Common Snipe presents some curious anomalies. The extreme forms of the two species may be diagnosed as follows:—

Scolopax gallinago.	*Scolopax wilsoni.*
Tail-feathers *fourteen* in number.	Tail-feathers *sixteen* in number.
Axillaries *white.*	Axillaries *transversely barred with broad dark bands.*
Breast with obscure dark *longitudinal streaks.*	Breast with obscure dark *transverse bars.*
Bill varying from 2·8 *to* 2·5 *inches* in length.	Bill varying from 2·7 *to* 2·3 *inches* in length.
Outer tail-feather crossed by *three* dark bars.	Outer tail-feather crossed by *five* dark bars.

So far as I know, the American birds are always constant to their characters; but, unfortunately for the validity of the two species, there is not one of these characters (except perhaps the very short bill, which is not always characteristic of the American form) which does not frequently occur in examples from the Old World. Hume says that in India Fan-tailed Snipes with sixteen tail-feathers are common enough. Snipes with barred axillaries are perhaps the rule rather than the exception, even in England. Snipes with transversely-barred breasts are occasionally found in the Old World, and the number of bars across the outer tail-feathers of British-killed examples varies from three to five. Nevertheless, I have never seen an Old-World example of a Snipe possessing all the characters of the American species.

It is easy to suggest a reason why the Nearctic Common Snipes should vary less than the Palæarctic Common Snipes. During the Interglacial period preceding the Glacial period (probably the last of the series), which more or less differentiated these two forms, they were presumably a circumpolar species. The gradual accumulation of ice at the North Pole gradually drove the species south, and soon isolated the Nearctic from the Palæarctic birds. Isolation was followed by its usual concomitant—differentiation, and the impossibility of interbreeding caused the two groups to become at least subspecifically distinct. The conformation of the American continent did not prevent constant intercourse in their temporary quarters in the south; consequently, whatever changes took place in the species became common property. On the other hand, in the Old World, the Snipes were probably isolated, during a severe Glacial period, in at least three separate colonies—in West Africa, the valley of the Nile, and the plains of India. As there is reason to believe was the case with the Willow-Wren and its close allies the two Chiffchaffs, the central colony appears to have been the most altered—Snipes with pure white axillaries being most common in Eastern Russia and Turkestan. The Willow-Wrens seem, however, to have been a more plastic race than the Snipes, and their differentiation appears to have been complete; although the present range of the Willow-Wren overlaps that both of the Eastern and Western Chiffchaff, the result is that, if cross-breeding takes place at all, it only produces a barren hybrid, and the species remain distinct. We may fairly assume that, in the case of the Snipes, differentiation was not carried far enough, and that consequently the Palæarctic Region is peopled with a race of mongrels.

The North-American Snipe is a summer visitor to the whole of the continent from the Atlantic to the Pacific up to the Arctic Circle and down to the latitude of New York. It winters in Mexico, Central America, the West Indies, and the extreme northern portion of South America. A few breed as far south as Maryland, and a few pass the winter as far north as Texas.

27. SCOLOPAX MAJOR.

The geographical distribution of the Great Snipe is specially interesting as affording one of many other examples of migratory birds which have extended their breeding-range to a considerable distance, but, in consequence of their having continued to follow their ancient "fly-lines," have caused the line of migration to and from their more recently annexed breeding-grounds to be remarkably circuitous. The range of the Great Snipe extends in summer from Scandinavia to the valley of the Yenesay, but in winter is confined to the basin of the Mediterranean and the continent of Africa. The Great Snipe is not even known to pass through Turkestan on migration, but apparently crosses valley after valley in Asia until it turns southwards in the company of the European members of the species. It breeds in suitable localities throughout the basin of the Baltic, and in Scandinavia as far north as lat. 70°. In the valleys of the Petchora and the Obi it ranges up to lat. 67½°, but in the valley of the Yenesay it has not been met with further north than lat. 66½°. It passes through North Persia and the Caucasus on migration, and winters in suitable localities throughout South Africa, though a few remain in the basin of the Mediterranean.

As its name implies, it is rather larger than the Common Snipe, which it resembles very closely in the colour and marking of its upper parts, though the white tips of its wing-coverts are more conspicuous. Its under parts are more profusely barred, but the chief distinction lies in the tail, which consists of sixteen feathers. In the adult Great Snipe the terminal half of the four outside tail-feathers on each side is unspotted white, whilst in the Common Snipe it is buff with a subterminal dark brown bar.

28. SCOLOPAX GALLINULA.

The Jack Snipe is a much smaller bird, scarcely half the weight of the Common Snipe, and easily distinguished by the purple gloss of its mantle and the green inside web of its scapulars. It breeds locally in the Arctic Regions as far north as lat. 70°, from the Atlantic to the Pacific, and on the Dovrefjeld above the limits of forest-growth. It passes through Turkestan and Japan on migration, and winters in the basin of the Mediterranean, in Persia, Afghanistan, India, Ceylon, Burma, and Formosa.

The geographical distribution of the Snipes is almost an exact parallel to that of the Thrushes, a group of birds quite as cosmopolitan. The Common Snipe and the Song-Thrush and their respective allies inhabit the Nearctic and Palæarctic Regions. The Snipes of the Ethiopian Region and the *Planestici* (*Turdus olivaceus* and its allies) of the same Region find the closest possible allies in the Neotropical Region. The Himalayan Semi-Woodcocks and Ouzels (*Merula*) are represented by very near allies in tropical America, though the former have not left traces of their emigration in the Pacific Islands as the latter have done. The coincidence can scarcely be regarded as accidental, but appears to be an instance of the same causes producing the same effects.

In conclusion, one question suggests itself as a necessary corollary to these curious facts of the geographical distribution of the Snipes. What connection can be traced between them and the Zoological Regions into which the world has been divided by Sclater and Wallace? The only reply that can be honestly given is :—*none at all!* The fact is that the so-called Zoological Regions are not zoological. They are fairly accurate as regards the distribution of the Mammals; somewhat more so in relation to Passerine Birds, and somewhat less so in relation to true Reptiles. For Fishes and Batrachians we are told that an entirely different set of Regions have had to be invented, and these appear to be much more applicable to Non-passerine Birds than those usually adopted.

The geographical distribution of *Scolopax* appears to be somewhat anomalous from either point of view. The Painted Snipes are confined to the Equatorial Southern Zone, and are found in each of its four Regions,—the Indian, the African, the Tropical American, and the Australian Regions. The Woodcocks are also found in the Northern Zone, but those inhabiting the Europeo-Asiatic Region and the eastern half of the North-American Region appear to form one group, whilst the other is found only in the south-east of the Indian and the north-west of the Australian Regions. The range of the Semi-Woodcocks being confined to the Himalayas and the Andes, with outlying species in Japan, and in Auckland Island, south of New Zealand, would be most complicated if expressed in terms of either system of Regions. The typical Snipes are only absent during the breeding-season from the Oriental and Australian Regions; but it is worthy of note that the only species found in the Nearctic Region finds its nearest ally in the Palæarctic Region, whilst some of the Snipes of the Ethiopian Region are doubtfully distinct from some of those of the Neotropical Region. The final conclusion to be arrived at appears to be that the Snipes recognize to a considerable extent the Regions of Günther and Boulenger, but are lamentably ignorant of those propounded by Sclater and Wallace.

XVIII.—*Descriptions of two new Birds from Tibet**.

By Dr. JULIUS VON MADARÁSZ.

1. MYIOPHONEUS TIBETANUS, n. sp.

♂. Cærulescenti-ater; fronte, apicibus plumarum pectoris metallice splendentibus; humeris ultramarinis; remigibus rectricibusque atris ultramarino tinctis; rostro flavo, culmine nigrescente; pedibus nigris. Long. tot. c. 300 mm., al. 165 mm., caud. 120 mm., rostr. a fr. 26 mm., tars. 55 mm.

This new species is similar to *M. temmincki*, but smaller, and differs in the colouring as follows:—the glistening tips of the feathers on the breast and abdomen are infinitely smaller, and on the back totally absent; the light blotches on the end of the secondary coverts are also wanting. In *M. temmincki* the bases of the feathers on the abdomen and flanks are white; in this new species, on the contrary, they are uniformly black.

2. PUCRASIA MEYERI, n. sp.

♂. *Pucrasiæ xanthospilæ* mari similis, sed pectore et abdomine medio vividius castaneis; rectricibus intermediis fulvis, nigro-striatis, rectricibus lateralibus rufis, apicem versus nigris, albo terminatis. Long. tot. c. 530 mm., al. 250 mm., caud. 240 mm., rostr. a fr. 28 mm., tars. 70 mm.

♀. *Pucrasiæ xanthospilæ* feminæ similis, sed mento, gula et colli lateribus luteis; rectricibus intermediis fulvis, nigro vermiculatis, rectricibus lateralibus rufis, apicem versus nigris, albo terminatis. Long. tot. c. 480 mm., al. 220 mm., caud. 190 mm., rostr. a fr. 25 mm., tars. 65 mm.

Male. Forehead, cheeks, throat, and the lengthened part of the crest black, with greenish-blue reflections from the one point of view, and deep lilac from the other. Crown of head and shorter part of the crest dusky sandy buff; a patch on each side of the neck pure white; behind the white patches and nape a band of ochre-yellow, some feathers having a black line on the margins. Back black, every feather having along its shaft a 3 mm. broad line, which diminishes towards the tips, some of them being yellowish, and others grey mixed with brown, and all bordered with grey. The lower back, rump, sides of the breast, and abdomen ashy grey; all the feathers bordered with black and grey, some rump-feathers having a mixed dingy fawn-colour. Fore neck, middle of the breast, and abdomen rich dark chestnut. Primaries and secondaries of a darkish brown, the outer webs bordered with light fawn-colour; secondary coverts black, fawn at their bases, freckled with black; a narrow line along the shafts of light brownish grey; all margined with grey. Upper tail-coverts fawn-colour, striped and freckled with black. Central tail-feathers rufous, becoming lighter at the tips, with two irregular black lines on each side, margined with fawn-colour; outer tail-feathers rich rufous on the outer webs, and brownish on the inner margins, banded with black, each feather tipped with pure white; underside of tail brownish black broadly tipped with white; the under tail-coverts deep chestnut, irregularly marked with black, all being broadly tipped with white; vent uniformly light chestnut.

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* I have described a new species, *Tetraophasis széchenyii*, in the 'Zeitschrift für die gesammte Ornithologie,' 1885, p. 50, as coming from Szü-csuan, *East* Tibet; but I have since been informed that all the specimens, among which was that of the last-named species, were purchased from a person who brought them from *Central* Tibet.

Female. The head, a line through the eyes, and a narrow band encircling the lower part of the throat black glossed with green, each head-feather edged with light rufous; ear-coverts and a stripe on both sides of the nape light rufous edged with black, glossed with green. Superciliary stripe, chin, throat, and sides of neck tawny. All round the lower part of the neck, breast, abdomen, and vent light rufous—brighter on the lower neck and upper breast—with a greyish shade; each feather freckled and deeply margined with black, shaft light. Back, rump, and upper tail-coverts pale brown, striped with white, fawn-colour, and black, freckled with black, deeply blotched with black on the interscapular region. Primaries dusky brown, exterior margins fawn-colour; secondaries dusky brown, bordered on outside with light rufous freckled with brown. Wing-coverts as in the male. The central tail-feathers rufous, irregularly patched with black; outer tail-feathers uniformly rich rufous, thinly margined on the inner sides with dusky brown, each feather banded with black and tipped with white; underside of tail-feathers similarly marked, but of a brownish dusky shade. Under tail-coverts rich rufous, tipped with white.

I take the liberty of naming this new species after my esteemed friend, the well-known ornithologist, Hofrath Dr. A. B. Meyer, Director of the Dresden Museum.

The type specimens of these new species belong to the Hungarian National Museum.

Budapest, Nov. 28, 1885.

XIX.—*On the Claws and Spurs of Birds' Wings.*

By P. L. Sclater, M.A., Ph.D., F.R.S.

In the 'Proceedings' of the Boston Society of Natural History for 1881 (vol. xxi. p. 301) will be found an excellent paper by Mr. J. Amory Jeffries, "On the Claws and Spurs on Birds' Wings," which, I regret to say, has hitherto escaped notice in the columns of this Journal. It is, however, eminently worthy of careful study. Mr. Jeffries shows definitely for the first time, so far as I can make out*, that the spurs which are in some cases found on the wings of birds are of an entirely different nature from the claws also met with on the same organs, and have, in fact, nothing whatever to do with them.

The spur, as Mr. Jeffries points out, is a structure on the wing which corresponds to the spur on the tarsus of the

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* Even so recent an authority as Dr. Selenka ('Bronn's Thier-Reich,' Aves, p. 75) has confounded together the spur and claw of birds. His account of the subject contains several serious misstatements, and is obviously not based on his own examination. Owen's 'Anatomy of Vertebrates' (*cf. op. cit.* ii. p. 74) likewise confounds claws and spurs. It must be even admitted that Nitzsch (usually a model of accuracy, and the first scientific describer of the claws of birds) did not quite understand the differences between claws and spurs (see his 'Osteographische Beiträge,' no. 5. "Ueber das Nagelglied der Flügelfinger, besonders des Daumens:" Leipzig, 1811).

Common Fowl and of many others of the Phasianidæ. It consists of a bony core covered with a thick horny coat, and may, as I shall presently show, arise either from the carpus or from the metacarpus. Its function appears to be purely that of a weapon of offence. It is found in many quite unconnected groups of birds, such as the Spur-winged Plovers (*Hoplopterus*), the Jacanas (*Parra*), the Screamers (*Chauna* and *Palamedea*), the Spur-winged Geese (*Plectropterus*), and the Torrent-Ducks (*Merganetta*). These genera are widely separated; and it is obvious that in each case the spur must have been specially developed.

On the other hand, the claws on the wings of the bird, as Mr. Jeffries has likewise clearly explained, are the homologues of the claws on the feet: that is, they are dwarfed representatives of the nails on the anterior extremities which birds have inherited from their reptilian ancestors. They are absolutely useless to birds in their present state of existence —at any rate when the bird is adult—as they are so covered over by the feathers that it is in most cases very difficult to find them. If, however, a careful search be made at the end of the first and second digits of certain birds, a small claw will be discovered investing the last phalanx. Usually, if present, the claw is found at the end of the first digit; more rarely it occurs on the second. When it is placed on the first digit it will be found at the end of the second (or ungual) phalanx; when it occurs on the second digit it will be found at the end of the third (or ungual) phalanx. This shows that the claw is a remnant of the nail that formerly terminated the first two digits, and proves that, as Mr. Jeffries says, the ancestors of birds had a two-jointed first finger and a three-jointed second finger, both provided with claws. This was also the case with *Archæopteryx*, which had, moreover, a claw on its third digit [*]. But such is not the case in modern birds, in which the claws, when still existing, are found only at the extremities of the first and second digits.

My attention having been called to this subject, I have had some preparations made which serve to illustrate several new points, or points which I think have not as yet been quite clearly understood. These I will take up as they come before me.

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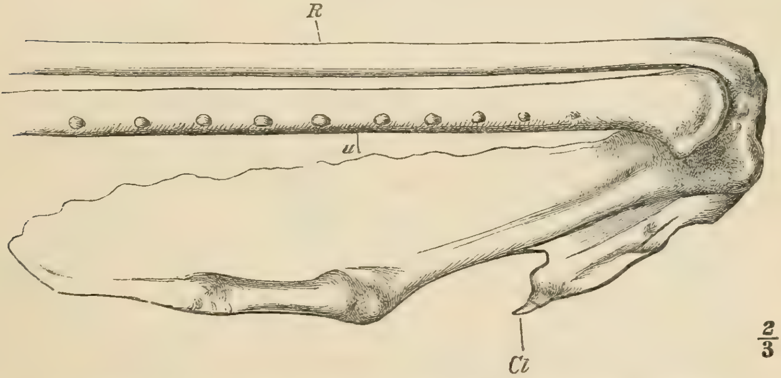
[*] See Vogt's description and figure of the manus of *Archæopteryx*, Ibis, 1880, pp. 438, 443.

1. The Wing-claw of the King Vulture (*Gypagus papa*).

Dr. R. Shufeldt (Am. Nat. vol. xv. p. 906) was the first to show the presence of a claw on the index digit of *Cathartes atratus* and *Pseudogryphus californianus*; and its existence in both species of *Cathartes* was subsequently confirmed by Mr. W. A. Forbes (Am. Nat. xvi. p. 141). Dr. Shufeldt alludes also to its existence in the King Vulture; and I have now great pleasure in confirming the presence of a well-developed claw in this form of the Cathartidæ. The drawing given herewith (fig. 1) represents the outer surface of the right wing of a specimen of this bird that recently died in the Zoological Society's Gardens. The claw (*Cl*) at the extremity of the first finger is small and very slightly curved, but, as will be seen, very distinctly manifest. It measures about ·015 inch in length.

Fig. 1.



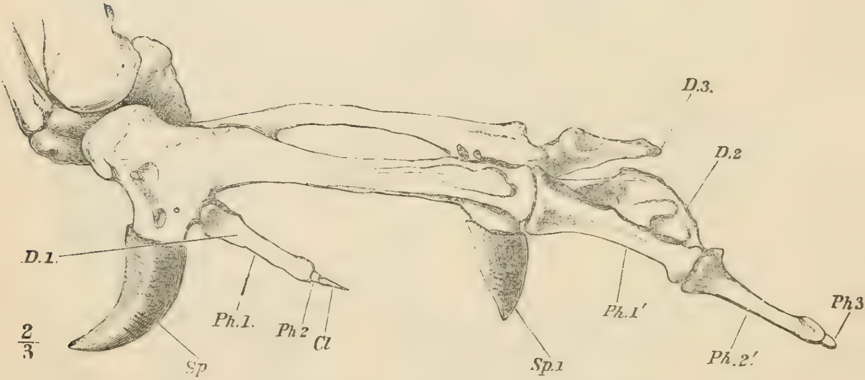
Outer surface of right wing of the King Vulture (*Gypagus papa*), reduced $\frac{2}{3}$, with feathers removed. *Cl*, claw on first digit. The flesh is removed from the radius (*R*) and ulna (*u*).

I have not yet had an opportunity of examining any of the Vultures of the Old World, to see whether a corresponding structure is met with in them; but Dr. Shufeldt was unable to find it in the specimens which he examined, and if its non-existence is confirmed, another item will be added to the many differences which separate the Vultures of the Old World from the so-called Vultures of the New World.

2. The Claw and Spurs of the Screamer (*Chauna derbiana*).

The wing of a Screamer (*Chauna derbiana*) lately sent to me by a correspondent in Venezuela has supplied a very interesting specimen, as it affords an example of a well-developed claw and two spurs coexisting in the same species.

Fig. 2.



Outer surface of end of left wing of Screamer (*Chauna derbiana*), reduced $\frac{2}{3}$, showing two metacarpal spurs (*Sp*, *Sp.* 1) and claw on the first digit (*Cl*). *D.* 1, first digit: *Ph.* 1, first phalanx; *Ph.* 2, second phalanx. *D.* 2, second digit: *Ph.* 1', first phalanx; *Ph.* 2', second phalanx; *Ph.* 3', third phalanx. *D.* 3, third digit.

The wing-spurs in the Screamer are well known to be of enormous size, and are no doubt formidable weapons of offence. They are placed one on the proximal and the other at the distal extremity of the coalesced metacarpals, and project nearly in a straight line away from the radial edge. The first spur, which rises from the base of the metacarpal, on the proximal side of the attachment of the index digit, consists of an elongated osseous base, about 1·3 inch in length, slightly recurved towards the radius. The horny covering, which is shown *in situ* in the drawing (*Sp*), extends about ·2 inch further. The second spur (*Sp*. 1) is exserted nearly in the same plane at the further extremity of the metacarpal; it is not quite so long, measuring, together with the horny covering on it, about 1 inch in length, and is rather more flattened in shape and has but slight indications of backward curvature. Just in front of the first spur is situated the index digit (*D*. 1); it consists of a long first phalanx measuring about 1 inch in length, what is apparently a very short second or ungual phalanx measuring only 0·1 inch, and a slight pointed claw of about 0·2 inch in length attached to this phalanx. Thus the whole first digit, from the base to the extremity, measures 1·3 inch.

Nothing can better illustrate the entire diversity, in origin and position, of the "wing-spur" and "wing-claw" than this specimen.

[To be continued.]

XX.—*On some Papuan, Moluccan, and Sulu Birds.*

By T. Salvadori, C.M.Z.S.

Through Dr. Nehrkorn's kindness I have been able to examine some of the birds mentioned by him in his paper "Zur Avifauna der Insel Waigiou" (Journ. f. Orn. 1885, pp. 30–35), and I have found, as I suspected, that some species have not been rightly identified. I should not have mentioned this if it had had no bearing upon the geographical distribution of some of the species; but this being the case, I think that it will be right to point out what those species really are.

Cyclopsittacus aruensis, Nehrkorn, Journ. f. Orn. 1885, p. 31.

Out of twenty specimens attributed to the above-mentioned species, two have been presented by Dr. Nehrkorn to the Turin Museum, and they both belong to *Cyclopsittacus diophthalmus,* and not to *C. aruensis,* which is the southern representative form, confined to South New Guinea and the Aru Islands.

EDOLIISOMA REMOTUM, Nehrkorn, ibid. p. 32.

The male specimen mentioned by Dr. Nehrkorn, which has been presented to the Turin Museum, cannot possibly be attributed to *E. remotum,* Sharpe, from the far-distant New Ireland group, having the throat and cheeks shining black; it is very much like the male of *E. meyeri,* Salvad., from Mysori in Geelvink Bay, from which it scarcely differs, being only a little lighter; but I feel quite confident that when the female of the Waigiou bird is found, it will turn out to differ from the female of *E. meyeri* much more than the males of the two allied species do. In the genus *Edoliisoma* the females of allied species constantly differ, *inter se,* much more than the fully adult males.

HERMOTIMIA AURICEPS, Nehrkorn, ibid. p. 33.

The single female of this species mentioned by Dr. Nehrkorn is rightly identified, but it has been included, by mistake, among the birds from Waigiou, while, as shown by the original label, it is from Galela (Helmaheira). *H. auriceps* is confined to the Halmaheira group, and has never been found out of it.

CALORNIS OBSCURA, Nehrkorn, ibid. p. 33.

Dr. Nehrkorn mentions three specimens from Waigiou, and he has already noticed them as being so different from one another that he could scarcely recognize them as belonging to the same species. I have been able to examine one of them, an adult bird, and I think that it belongs to *C. cantoroides.*

CORVUS VALIDISSIMUS, Nehrkorn, ibid. p. 34.

I have not been able to inspect the specimen mentioned by Dr. Nehrkorn, which is now in the Berlin Museum; but knowing that *C. validissimus* is confined to the Halmaheira group, I suspected that the specimen alluded to from Waigiou belonged to *Macrocorax fuscicapillus,* a large species, with a powerful bill, already known from Waigiou. Dr. Nehrkorn, writing to me on the subject, says that the bird must really have been *Corax fuscicapillus,* as it had "einen schönen braunen Kopf."

Myristicivora melanura, Nehrkorn, ibid. p. 34.

Out of the seven specimens mentioned, one has been presented to the Turin Museum, and this belongs to *M. bicolor,* having the under tail-coverts white, without the peculiar black spot of *M. melanura.* It seems that the species of the *Myristicivora* group are still not well understood, notwithstanding all I have said about them in my paper "Osservazioni intorno alle Specie del Genere *Myristicivora,* Rchb." (Ann. Mus. Civ. Gen. ix. pp. 265–277), and especially in the 'Ornitologia della Papuasia e delle Molucche,' iii. pp. 107–118. Dr. Guillemard quite lately (P. Z. S. 1885, p. 575) identified one specimen from Halmaheira with *M. bicolor*; but, judging from the description, I should say that it must belong to *M. melanura.*

Having mentioned Dr. Guillemard, I take the opportunity of making a few other remarks on his interesting "Report on the Collections of Birds made during the Voyage of the Yacht 'Marchesa,'" published in the Proceedings of the Zoological Society of London for last year.

Artamides pollens (Salvad.), Guillemard, P. Z. S. 1885, p. 258.

This species is included by Dr. Guillemard among the Sulu birds on the evidence of one specimen from Lapac Island. "That this species," he says, "should be found at such a great distance [Sulu Islands] from the locality whence it was first recorded [Ké Islands] is very curious"; "but," he continues, "it is not improbable that we may, before long, obtain this species from some of the intermediate localities." I feel quite confident that such will not be the case, knowing that there is already another allied species in an intermediate locality—*Artamides schistaceus,* Sharpe, of the Sula Islands. Knowing also how localized generally are the *Graucali,* I would suggest that the specimen from Lapac Island, different from the Ké Island specimens, being "somewh a darker on the cheeks, ear-coverts, and lores, and apparently smaller in all its measurements," should be the type of a new species, for which I propose the name of *Graucalus guillemardi.*

Eos insularis, Guillem. ibid. p. 565, pl. xxxiv.

This species seems to be intermediate between *E. riciniata* from the Halmaheira group, and *E. wallacei* from Waigiou, Guebeh, and Batanta, and perhaps is more like the latter, some specimens of this having a violet occipital spot like *E. insularis.*

Colluricincla megarhyncha, Guillem. ibid. p. 571.

Graucalus magnirostris, Forsten, Guillem., ibid. p. 633.

Of the first species one specimen from Batchian is mentioned, and of the second one from Waigiou; but both the localities assigned upset what is known of the geographical distribution of these species. As regards the first specimen, Dr. Guillemard remarks that "as neither this genus (*Colluricincla*) nor *Rhectes* has been recorded from the Moluccas, some doubt must exist as to the accuracy of the locality." As to *Graucalus magnirostris*, Dr. Guillemard rightly notices that "hitherto it has been considered as peculiar to the Halmaheira group." Trying to put things right, it has just struck me that the labels of the two above-mentioned birds may have been exchanged, and that, if that has happened, everything would be clear. *Colluricincla megarhyncha* or, more likely, *C. affinis*, Gr., which is very much like the *Colluricincla* from Batanta, would be from Waigiou, and *Graucalus magnirostris* from Batchian.

Lorius lory (Linn.), Guillem. ibid. p. 621.

Dr. Guillemard mentions a specimen from Waigiou, which, he says, "corresponds to Salvadori's *L. erythrothorax*, but is evidently only a variety of *L. lory*." If Dr. Guillemard means to hint that my *L. erythrothorax* is a variety of *L. lory*, I think that he is mistaken. In my 'Ornitologia' I have alluded to many specimens like that mentioned by

Dr. Guillemard, and they are young birds which in some respects approach to *L. erythrothorax*, a perfectly distinct species, with a different geographical distribution.

Chalcopsittacus ater (Scop.), Guillem. ibid. p. 622.

It appears to me that the specimens from Mysol with the forehead and the tibials red require comparison, as most likely they constitute a peculiar race, intermediate between *Ch. ater* and *Ch. insignis*, Oust. In my 'Ornitologia' I have already alluded to one or two specimens from Mysol showing those variations.

Manucodia chalybeata, Penn., Guillem. ibid. p. 646.

Dr. Guillemard says that he is strongly inclined to regard this species and *M. atra* as identical. Dr. Meyer has already pronounced himself against Dr. Guillemard's opinion, on account of the different shape and dimensions of the bill in the two birds (Zeitschr. f. ges. Orn. 1885, p. 374); I shall only add, without repeating all I have said about the distinction of the two species, that the young birds of *M. chalybeata* are quite different from those of *M. atra*, and moreover the geographical distribution, contrary to Dr. Guillemard's opinion, is not the same. *Manucodia atra*, besides being found nearly everywhere in New Guinea, is a very common bird in the Aru Islands, where *M. chalybeata* does not occur.

Turin Zoological Museum, Feb. 5th, 1886.

XXI.—*Contributions to the Ornithology of the Philippine Islands.*—No. 2*. *On Additional Collections of Birds.* By R. G. Wardlaw Ramsay, F.Z.S., M.B.O.U.

I have received within the last few months, from my friend Mr. F. Maitland-Heriot, two further collections of birds which were obtained in the neighbourhood of Manilla. The more noteworthy species in these collections are:—

1. Falco melanogenys.

Falco melanogenys, Gld. P. Z. S. 1837, p. 139; Sharpe, Cat. B. Brit. Mus. i. p. 385.

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* For No. 1 see 'Ibis,' 1884, pp. 330–335.

A female Falcon, not quite adult, is identified by Mr. J. H. Gurney as belonging to this species. The doubt expressed by the late Lord Tweeddale, Tr. Z. S. ix. p. 139 (Memoirs, p. 306), as to the occurrence of this species in the Philippines is thus removed. With reference to this specimen and another, said to have come from the same islands, in the Norwich Museum, Mr. Gurney writes *in epist.* as follows:—

"Both these Philippine Falcons are in the very characteristic plumage of the immature *F. melanogenys*; but it would be interesting to obtain, if possible, a fully adult Philippine-Islands example. These two are a little longer in the wing than Australian specimens; the largest Australian female of which I have a note has a wing-measurement of 13·50 inches, the Norwich example has it 13·70 inches, and yours 13·90 inches, whilst that of the female of *F. peregrinus* ranges from 14·10 to 14·75 inches."

2. Limnaetus philippinensis (19)*.

Limnaetus philippensis, Gld., Tweedd. P. Z. S. 1878, p. 281 (p. 587).

Three specimens have been sent.

3. Lophotriorchis kieneri.

A young bird from Manilla is thus identified by Mr. J. H. Gurney.

4. Ninox philippinensis (29).

5. Ninox lugubris (31).

Obtained in S. Mindanao by Mr. A. H. Everett. One specimen now sent from Manilla.

6. Pseudoptynx philippinensis (32).

7. Ceyx cyanopectus (54 & 60).

8. Ceyx melanura (58).

Both seem very common at Manilla.

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* The numbers in brackets following the title are those of my revised list of Philippine Birds, App. Tweedd. Orn. Mem., and those following the references to Lord Tweeddale's writings indicate the page on which they will be found in the Memoirs.

9. Lyncornis macrotis (76).

10. Hierococcyx hyperythrus (88).

Cuculus hyperythrus, Gld. P. Z. S. 1856, p. 96 (1856).

Hierococcyx pectoralis, Cab. Mus. Hein. iv. pt. 1, p. 27 (1862); Wald. Tr. Z. S. ix. p. 161 (p. 327); Tweedd. P. Z. S. 1878, p. 946 (p. 637).

Hierococcyx fugax, Horsf. apud Salvad. Ucc. Born. p. 65; Wardlaw Ramsay, Ibis, 1884, p. 333.

Hierococcyx sparverioides, Vig. apud Schrenck, Voy. Amurland, p. 257, pl. 10.

Mr. Maitland-Heriot has sent me three adult and one young specimen of *H. hyperythrus* from Manilla, and as I have compared these with the type and with a large series of allied species in the British Museum, the Tweeddale and Hume collections, and also in that of Mr. Seebohm, I am now of opinion that Count Salvadori was partly right in uniting this species to *H. fugax,* Horsf. (*l. c.*), inasmuch as many of the specimens attributed to the latter species in Malacca and Borneo, and perhaps Java, whence the type of *H. fugax* came, are really the young of *H. hyperythrus,* Gld. The range of *H. hyperythrus* is Japan, Amoorland, China, and the Philippine Islands, the young birds being found in Borneo and Malacca, and perhaps Sumatra and Java in the winter. It closely resembles *H. nisicolor,* Hodgs., which ranges from the Himalayas to Tenasserim, descending perhaps into the Malay peninsula, whence it has been recorded.

For some years I have possessed a specimen of a Cuckoo, somewhat like *H. sparverioides,* collected in the mountains of W. Sumatra by Mr. Carl Bock. As all the specimens that I have ever seen of *H. fugax,* Horsf., were in the striated plumage common to young Cuckoos, it occurred to me that perhaps my bird was the adult of that species; but I am now convinced that it is not so, but an undescribed species differing from *H. sparverioides* in being much smaller (wing 7·5) and in being of a much darker and richer brown above; the entire head and throat, moreover, is ashy grey, very different from the dark ashy beard of that species. I propose to call this species Hierococcyx bocki, sp. n. It is not *H. nisoides,* Bl.,

UPPER SURFACE BROWN.

Breast rufous; belly and abdomen barred.	Darker . .	*H. bocki.*	Wing 7·5 inches.	Throat uniform slate-colour.
	Lighter .	*H. sparverioides.*	Wing 9 to 10 inches.	
Breast and belly striated		*H. fugax.*		
		H. hyperythrus, jun.		
		H. nanus.	Wing 5·5 to 6 inches.	

UPPER SURFACE ASHY.

	Paler . .	*H. varius.*	
Breast and belly rufous; abdomen pure white	Darker	*H. nisicolor.*	Rufous paler, mixed with white.
		H. hyperythrus.	Rufous darker, uniform or nearly so.

the type of which is only a small specimen of *H. sparverioides;* nor is it *H. strenuus,* Gld., said to have come from the Philippine Islands, which was described from a much distended skin of the same species.

On a closer examination of a good series of *H. fugax,* it is evident that many of the specimens are those of quite mature birds. It follows therefore that we have in *H. fugax* a species which in maturity retains a plumage which in most other Cuckoos would denote immaturity. The same remarks apply to the *H. nanus,* Hume, a pretty little Cuckoo from Tenasserim—in fact, a miniature of *H. fugax* (wing 5·5 to 6 inches). In *Cuculus sonnerati,* Lath., and *C. pravatus,* Horsf., we find two species which never get beyond what is known as the hepatic phase of plumage in Cuckoos. *H. fugax* and *H. nanus* resemble *H. sparverioides* and *H. bocki* in having the upper surface brown, but in the striations of the breast they are more like the young of *H. hyperythrus.*

The Cuckoos of this subgenus may be arranged as shown in the table on page 158.

11. CYORNIS HERIOTI, sp. nov.

Cyornis banyumas (Horsf.), apud Tweedd. P. Z. S. 1878, p. 615, ♀ (p. 610).

The female of the two birds sent from Palawan by Mr. A. H. Everett was attributed to *C. elegans* by Mr. Sharpe, Cat. B. iv. p. 447.

Lord Tweeddale was in error, I think, in referring it to *C. banyumas,* inasmuch as this specimen is a brown bird of the *C. rubeculoides* group, whilst *C. banyumas* belongs to the *C. tickelliæ* group, in which the female is blue, like the male.

The bird now sent by Mr. Maitland-Heriot is a female, which most resembles *C. elegans,* but differs in having the throat and breast pale olive-brown instead of bright rufous. I propose to name it *C. herioti,* after the sender.

12. IOLE PHILIPPINENSIS (182).

It is worthy of note that the birds from Negros and Guimaras are much larger (wing 4·35 inches) than those from Luzon, Zebu, and N. Mindanao (wing 3·7 to 4 inches).

13. Locustella lanceolata.

New to the Philippine list.

14. Cisticola cursitans (197).

Cisticola cursitans, Tweedd. P. Z. S. 1878, p. 710 (p. 622).

New to the island of Luzon.

15. Anthus gustavi (209).

Two specimens.

16. Alauda wattersi (266).

Alauda wattersi, Sw. P. Z. S. 1871, p. 389; Tweedd. P. Z. S. 1878, p. 710 (p. 623).

Three specimens of this Lark, identified by Lord Tweeddale with *A. wattersi,* which is closely allied to, if not identical with, *A. cœlivox,* Swinhoe, one of the numerous subspecies of *A. arvensis.*

Wing 3·3 inches.

It evidently breeds in the islands, as one of Mr. Heriot's specimens is that of quite a young bird.

17. Mirafra philippinensis, sp. nov.

Seven specimens of a small *Mirafra,* allied to *M. parva,* Swinhoe, of Flores, but very much darker in plumage than that or any of the other species.

Above deep brown, each feather margined with pale brown; lores and superciliaries yellowish white or buff; outer edge of some of the primaries and secondaries chestnut, which colour extends more or less over the shoulders, especially in young birds. Beneath buff, slightly rufous on the flanks and breast in some specimens; feathers of the throat and breast with a triangular brown spot. Wing 2·7 inches, tail 2, tarsus ·8.

18. Ptilocolpa griseipectus (280).

19. Excalfactoria chinensis (297).

The Philippine bird belongs to the true *E. chinensis.* See Wald. Tr. Z. S. ix. p. 224 (p. 387).

20. Gallicrex cinerea (319).

21. Porzana bailloni (322).

Porzana pygmæa (Naum.), Tweedd. Tr. Z. S. ix. p. 230 (p. 392).

Two specimens sent.

The Philippine habitat is thus confirmed.

22. Porzana tabuensis.

One specimen is sent. This species is new to the Philippine list.

23. Ciconia episcopus (348).

New to Luzon.

24. Gorsachius melanolophus (360).

An adult bird, with a chestnut head, which closely agrees with an adult specimen from Japan (mentioned 'Ibis,' 1884, p. 335). Without more specimens it is impossible to give a decided opinion, but I am more than ever disposed to think that the Japanese and Philippine species are distinct from the continental bird. Mr. Oates's remarks (B. Burmah, ii. p. 260) should, however, be consulted.

Through the kindness of Mr. George Martin, of Auchendennan, Alexandria, N.B., I have had the opportunity of examining a collection of birds received by him from the Philippine Islands. In the collection I have found a few specimens which are worthy of note.

25. Scelostrix candida (37).

Luzon, from which it had not previously been recorded.

26. Graucalus striatus (110).

Guimaras: it does not appear to have been recorded from this island before.

27. Pericrocotus novus, sp. nov.

An apparently undescribed species of *Pericrocotus*, of the *P. flammeus* group, obtained in the province of Isabella, in Northern Luzon, was in the collection. The specimen was a male, but unfortunately it was lost in going through the post to Mr. R. B. Sharpe. I omitted to take a description of it previous to sending it; but as I have no doubt in my own mind of the distinctness of the species, I do not hesitate to bestow on it the title of *Pericrocotus novus.* It belongs to the *P. flammeus* group, and is most nearly allied to *P. exsul* of Java.

28. Sturnia violacea (252).
Luzon, to which new.

29. Calornis panayensis (255).
Guimaras. Not previously recorded thence.

30. Ardetta sinensis.
Luzon. Not recorded before from Luzon.

XXII.—*On a Collection of Birds from the vicinity of Muscat.*

By R. Bowdler Sharpe, F.L.S., F.Z.S., &c., Zoological Department, British Museum of Natural History.

(Plate VI.)

For the collection here described the British Museum is indebted to the kindness of Colonel Miles, and the interest which attaches to any series of birds from a new locality is certainly not wanting in the present instance. The only information we possess up to the present concerning the ornithology of this part of Arabia is contained in a short reference in Mr. Hume's diary of his expedition to Sind and the Mekran coast (' Stray Feathers,' i. pp. 144–166). Mr. Hume was at Muscat on the 22nd of February, 1872, and stayed till the evening of the 24th. Beyond a few Gulls and sea-birds, he found on shore only some Common Sandpipers, Egyptian Vultures, Ospreys, Ravens, Sparrows, Turtle-Doves, and a Kingfisher; but it was of course impossible for him in such a short visit to get into the interior, where, however, he was informed, there were many birds. We hope soon to receive from Colonel Miles some further particulars as to the exact localities where the specimens were procured, but meanwhile I have thought it of some interest to give a list of the species.

Where the species have not been mentioned in the British Museum ' Catalogue of Birds,' I have referred to Mr. Hume's " List of Indian Birds," published in ' Stray Feathers ' for

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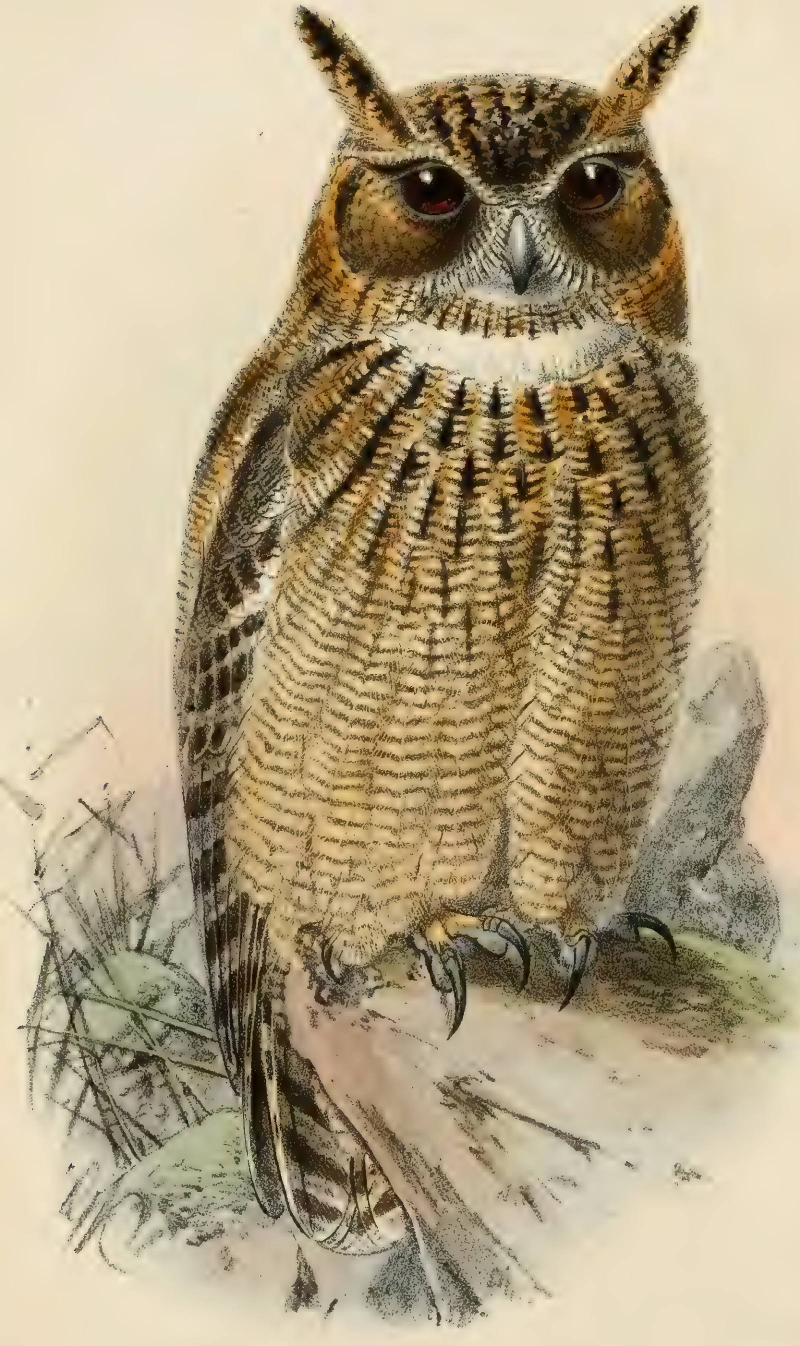

J. G. Keulemans lith.

Hanhart imp.

BUBO MILESI.

1879 (pp. 73–116); it contains full references to Jerdon's 'Birds of India' and 'Stray Feathers,' in which works ornithologists will find many details respecting the birds mentioned in the present paper.

Falco communis, Gm.; Sharpe, Cat. B. Brit. Mus. i. p. 376.

No. 19. An immature bird.

Falco concolor, Temm.; Sharpe, t. c. p. 405.

No. 12. Quite a young bird, the determination of which has given me some trouble. The peculiar pink hue of the under surface is quite different from that of any young Hobby with which I am acquainted, and no specimen out of our large series of *Falco subbuteo* can be found to match it. I therefore believe it to be an immature *Falco concolor*, although it does not resemble exactly any specimen I have yet seen, nor any figure of the young bird. This, I fancy, may be due to the fact that the Muscat specimen is younger than any previously procured by naturalists. I have asked Colonel Miles to endeavour to obtain an adult bird of this Falcon, and shall await its arrival with interest.

The only specimen of this species from North-eastern Africa in the Museum is an adult bird from Efat in Shoa, obtained by Sir W. C. Harris. It is very much lighter grey than any of the Madagascar specimens in the collection, but much resembles the figure given by Grandidier and Milne-Edwards (Hist. Nat. de Madagascar). This species would appear to be subject to melanism, as all the Madagascar specimens in the Museum are blacker than the Efat bird.

Circus pygargus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 64.

No. 12. Two young birds.

Scops giu (Scop.); Sharpe, Cat. B. Brit. Mus. ii. p. 47.

No. 2. An adult bird, agreeing with European specimens. Mr. Cumming has sent examples of it from Fao.

Bubo milesi, sp. n. (Plate VI.)

A small Eagle Owl cannot be referred to any known species with which I am acquainted. It is not *B. ignavus* nor *B. turcomanus,* for it is not half the size, and moreover belongs to a section of the genus *Bubo* in which the last joint of the toes is unfeathered. It has no "wig" like *B. bengalensis* or *B. ascalaphus,* and is so much smaller that it could never be mistaken for either of these species.

The nearest approach that I can find to the Muscat Owl is in *Bubo magellanicus* ! ; for *B. capensis* is an Owl of a totally different type, with large white ovate spots on the wing-coverts and on the underparts, whereas *B. milesi* is narrowly barred on the breast and abdomen, with the thighs and leg-feathers pale tawny, indistinctly but regularly barred across with dusky brown. The accompanying figure gives a good idea of the species, which will be seen to be unlike any other Palæarctic or Indian Eagle Owl. The measurements of the type specimen are as follows:—Total length 18 inches, culmen 1·55, wing 12·7, tail 7, tarsus 2·4.

CORVUS UMBRINUS, Sundev.; Sharpe, Cat. B. Brit. Mus. iii. p. 17.

No. 49. An adult specimen.

ORIOLUS GALBULA, L.; Sharpe, t. c. p. 191.

No. 38. An adult female. Also forwarded to the Museum from Fao by Mr. Cumming.

SAXICOLA PICATA, Blyth; Seebohm, Cat. B. Brit. Mus. v. p. 367.

No. 5. Two adult females.

SAXICOLA MONTANA, Gould; Seebohm, t. c. p. 384.

No. 33. Two adults.

PYCNONOTUS XANTHOPYGUS (Hempr. & Ehr.); Sharpe, Cat. B. Brit. Mus. vi. p. 135.

No. 28. Two adult specimens. Muscat will probably be found to be about the extreme eastern range of this species, which did not occur in Mr. Cumming's Fao collection.

ARGYA SQUAMICEPS (Cretzschm.); Sharpe, Cat. B. Brit. Mus. vii. p. 395.

No. 21. Two adult specimens. It is rather interesting to find that the Babbling Thrush of the Muscat district is *A. squamiceps* and not *A. huttoni,* which is the species inhabiting Persia.

Lanius fallax, Finsch; Gadow, Cat. B. Brit. Mus. viii. p. 247.

No. 22. Two specimens, which appear to agree with those determined by Dr. Gadow as *L. fallax* in the British Museum. One similar specimen was sent from Fao by Mr. D. W. Cumming.

Motacilla alba, L.; Sharpe, Cat. B. Brit. Mus. x. p. 454.

Nos. 13, 17. Two specimens in winter plumage.

Galerita cristata, L.; Hume, Stray F. 1879, p. 139.

No. 27. Two specimens.

Merops muscatensis, Sharpe, anteà, p. 15.

M. affinis *M. cyanophryi,* sed rostro minore et linea superciliari viridi-cyanea nec læte cyanea distinguenda. Long. tot. 7·5, culmen 1·0, alæ 3·75, caudæ 3·7, tarsi 0·35.

No. 15. This is a very interesting new form of Bee-eater, intermediate between *M. viridis* and *M. cyanophrys.* In its blue throat and eyebrow it resembles the latter species, as might be expected, but the blue of these parts is greenish in tint. The throat is paler and more verdigris-blue, the black throat-spot is smaller, and the bill is shorter. Mr. Dresser has kindly lent me his two specimens of *M. cyanophrys,* with which to compare the Muscat bird. At the same time the latter is approached by a Baluchistan example of *M. viridis* which has a decidedly blue throat, but all the specimens of *M. viridis* from India which show any blue on the throat have only a green eyebrow, not even mixed with blue. Of the two species, *M. muscatensis* must be compared with *M. cyanophrys* rather than with *M. viridis.*

Coracias indica, L.; Hume, t. c. p. 85.

No. 40. Two specimens. Both the birds sent agree entirely with Indian examples. The British Museum has also received a specimen from Fao, in the Persian Gulf, presented by Mr. W. D. Cumming.

Alcedo ispida, L.; Hume, Str. F. 1879, p. 86.

Alcedo bengalensis, Hume, Str. F. 1873, p. 168.

No. 1. An adult specimen. Mr. Hume considers the Kingfisher which he procured at Muscat to be *A. bengalensis;* but Colonel Miles's specimen appears to me to be *A. ispida,* supposing that the two forms can really be distinguished as more than races. After looking over Mr. Hume's immense series of *A. bengalensis,* I do not think it will be possible to maintain *A. bengalensis* as a distinct species; for, as he has pointed out, the Sind birds are really intermediate, and I see from his label that he has altered his opinion as to the Muscat specimen, which is now labelled *A. ispida.* In future I think that *A. bengalensis* will have to be regarded as a small, brightly-coloured, tropical race of the European *A. ispida.*

Upupa epops, L.; Hume, Str. F. 1879, p. 90.

No. 39. One adult bird.

Turtur risorius, L.; Hume, t. c. p. 110.

No. 35. Two specimens.

Turtur senegalensis, L.; Hume, t. c. p. 110.

No. 41. Two specimens.

Pterocles lichtensteini, Temm.; Hume and Marshall, Game Birds of India, i. p. 65.

No. 44. One specimen.

Pterocles coronatus, Licht.; Hume and Marshall, t. c. p. 57.

Nos. 46, 48. Two specimens.

Ammoperdix heyi, Hume and Marshall, t. c. p. 49, note.

Nos. 31, 43. A pair.

Ortygornis pondicerianus, Gm.; Hume and Marshall, t. c. p. 52.

No. 30. One specimen.

Houbara macqueeni (Gray & Hardw.); Hume and Marshall, t. c. p. 17.

No. 48. An adult specimen.

Crex crex (L.).
Crex pratensis, Hume, Str. F. 1879, p. 113.
No. 37. An apparently adult bird.

Fulica atra, L.; Hume, t. c. p. 113.
No. 8. A specimen killed in winter.

Œdicnemus scolopax (Gm.); Hume, t. c. p. 112.
No. 29. An adult bird.

Lobivanellus indicus (Bodd.); Hume, t. c. p. 112.
No. 4. An adult specimen.

Charadrius fulvus, Gm.; Hume, t. c. p. 112.
No. 25. An adult specimen.

Squatarola helvetica (L.); Hume, t. c. p. 112.
No. 14. Two specimens.

Ægialitis mongolicus (Pall.).
Ægialitis mongola, Hume, t. c. p. 112.
Nos. 11, 42. Two specimens in winter plumage, identified by Mr. J. E. Harting.

Ægialitis geoffroyi (Wagl.); Hume, t. c. p. 112.
No. 23. Two specimens, also identified for me by Mr. Harting.

Ægialitis dubius (Scop.); Hume, t. c. p. 112.
No. 15. One specimen.

Totanus ochropus, L.; Hume, t. c. p. 113.
No. 3. One specimen.

Totanus calidris, L.; Hume, t. c. p. 113.
No. 6. One specimen.

Totanus glareola, L.
Rhyacophila glareola, Hume, t. c. p. 113.
No. 31. One specimen.

Tringa alpina (L.); Hume, t. c. p. 113.
Nos. 26, 34, 35. Four specimens.

Tringoides hypoleucus, L.; Hume, t. c. p. 113.
No. 31. One specimen. Also noticed at Muscat by Mr. Hume (Str. F. 1873, p. 145).

Numenius major, T. & S. Faun. Japon. p. 110, pl. lxvi.

No. 47. An adult specimen. Mr. Harting pronounces it to be the large Asiatic Curlew.

Demiegretta gularis (Bosc); Hume, Str. F. 1879, p. 114.

No. 18. An adult bird.

Larus hemprichi, Bp.; Hume, t. c. p. 115.

No. 10. A specimen in moult, changing from the brown plumage into the full grey dress.

Larus ridibundus, L.; Hume, t. c. p. 115.

No. 24. Two specimens.

Larus cachinnans, Pall.; Hume, t. c. p. 115.

No. 9. An adult bird, identified for me by Mr. Howard Saunders.

Phaeton indicus, Hume; id. t. c. p. 116.

No. 7. An adult bird, belonging to the short-tailed form, called by Mr. Hume *P. indicus*.

XXIII.—*A List of the Birds obtained by Mr. Henry Whitely in British Guiana.* By Osbert Salvin, M.A., F.R.S., &c.

[Continued from p. 78.]

520*. Fregata aquila.

Tachypetes aquila, Cab. in Schomb. Guiana, iii. p. 763.

Fregata aquila, Baird, Brew., & Ridgw. Water-Birds N. Am. ii. p. 128.

Not represented in Mr. Whitely's collection.

521*. Pelecanus fuscus.

Pelecanus fuscus (Linn.), Cab. in Schomb. Guiana, iii. p. 764; Baird, Brew., & Ridgw. Water-Birds N. Am. ii. p. 139.

Not represented in Mr. Whitely's collection.

522. Phalacrocorax brasilianus.

Halieus brasilianus (Gm.), Cab. in Schomb. Guiana, iii. p. 764.

Phalacrocorax brasilianus, Baird, Brew., & Ridgw. Water-Birds N. Am. ii. p. 156.

Camacusa.

523*. Plotus anhinga.

Plotus anhinga, Linn., Cab. in Schomb. Guiana, iii. p. 764; Baird, Brew., & Ridgw. Water-Birds N. Am. ii. p. 166.

Not represented in Mr. Whitely's collection.

524*. Ardea cocoi.

Ardea cocoi, Linn., Cab. in Schomb. Guiana, iii. p. 752; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 6.

Not represented in Mr. Whitely's collection.

525. Ardea egretta.

Ardea egretta, Gm., Coues, B. N. W. p. 519.

Herodias egretta, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 23.

Ardea luce, Ill., Cab. in Schomb. Guiana, iii. p. 753.

Bartica Grove.

526. Ardea candidissima.

Ardea candidissima, Gm., Coues, B. N. W. p. 521.

Garzetta candidissima, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 28.

Ardea nivea, Lath., Cab. in Schomb. Guiana, iii. p. 753.

Bartica Grove.

527*. Ardea tricolor.

Ardea tricolor, Müll. Syst. Nat. Suppl. p. 111.

Hydranassa tricolor, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 39.

Ardea leucogaster, Wagl., Cab. in Schomb. Guiana, iii. p. 753.

Not represented in Mr. Whitely's collection.

528*. Ardea cærulea.

Ardea cærulea, Linn. Syst. Nat. i. p. 238.

Florida cærulea, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 43.

Ardea cærulescens, Lath., Cab. in Schomb. Guiana, iii. p. 753.

Not represented in Mr. Whitely's collection.

529. Ardea agami.

Ardea agami, Gm., Cab. in Schomb. Guiana, iii. p. 753.

Camacusa.

530. Ardea cyanurus.

Ardea cyanurus, Vieill. N. Dict. d'Hist. N. xiv. p. 421.

Ardea scapularis, Licht., Cab. in Schomb. Guiana, iii. p. 753.

Bartica Grove.

531*. Botaurus lentiginosus.

Botaurus lentiginosus (Shaw), Cab. in Schomb. Guiana, iii. p. 754; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 67.

Not represented in Mr. Whitely's collection.

532*. Botaurus pinnatus.

Ardea pinnata, Wagler, Isis, 1829, p. 662.

Botaurus pinnatus (Ill.), Cab. in Schomb. Guiana, iii. p. 754; Scl. & Salv. Ex. Orn. p. 181, pl. 91.

Not represented in Mr. Whitely's collection.

533. Tigrisoma brasiliense.

Tigrisoma tigrinum (Gm.) et *T. brasiliense* (Linn.), Cab. in Schomb. Guiana, iii. pp. 753, 754; Scl. & Salv. Ex. Orn. p. 184.

Merumé Mountains, Camacusa.

534*. Nycticorax nævius.

Ardea nævia, Bodd. Tabl. Pl. Enl. p. 51.

Nycticorax gardeni (Gm.), Cab. in Schomb. Guiana, iii. p. 755.

Nycticorax griseus nævius, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 55.

Not represented in Mr. Whitely's collection.

535*. Nyctherodius violaceus.

Nycticorax violaceus (Linn.), Cab. in Schomb. Guiana, iii. p. 754.

Nyctherodius violaceus, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 61.

Not represented in Mr. Whitely's collection.

536*. Pilherodius pileatus.

Nycticorax pileatus (Lath.), Cab. in Schomb. Guiana, iii. p. 754.

Not represented in Mr. Whitely's collection.

537*. Cancroma cochlearia.

Cancroma cochlearia, Linn., Cab. in Schomb. Guiana, iii. p. 755.

Not represented in Mr. Whitely's collection.

538*. Mycteria americana.

Mycteria americana, Linn., Cab. in Schomb. Guiana, iii. p. 751; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 79.

Not represented in Mr. Whitely's collection.

539*. Ciconia maguari.

Ciconia maguari, Temm., Cab. in Schomb. Guiana, iii. p. 752.

Not represented in Mr. Whitely's collection.

540*. Tantalus loculator.

Tantalus loculator, Linn., Cab. in Schomb. Guiana, iii. p. 756; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 81.

Not represented in Mr. Whitely's collection.

541*. Eudocimus ruber.

Ibis rubra (Linn.), Cab. in Schomb. Guiana, iii. p. 756.

542*. Phimosus infurcatus.

Ibis infurcatus, Licht., Cab. in Schomb. Guiana, iii. p. 756.

543*. Cercibis oxycercus.

Ibis oxycercus, Spix, Cab. in Schomb. Guiana, iii. p. 756.

544*. Theristicus caudatus.

Theristicus caudatus (Bodd.), Elliot, P. Z. S. 1877, p. 498.
Ibis albicollis, Gm., Cab. in Schomb. Guiana, iii. p. 757.
Theristicus melanopis, auct.

These four species of Ibis are not represented in Mr. Whitely's collection.

545. HARPIPRION CAYENNENSIS.

Ibis cayennensis (Gm.), Cab. in Schomb. Guiana, iii. p. 757.

Harpiprion cayennensis, Elliot, P. Z. S. 1877, p. 502.

Bartica Grove, Camacusa.

546*. PLATALEA AJAJA.

Platalea ajaja, Linn., Cab. in Schomb. Guiana, iii. p. 755.

Ajaja rosea, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 102.

Not represented in Mr. Whitely's collection.

547*. PHŒNICOPTERUS RUBER.

Phœnicopterus ruber, Linn., Cab. in Schomb. Guiana, iii. p. 761; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 415.

Not represented in Mr. Whitely's collection.

548*. PALAMEDEA CORNUTA.

Palamedea cornuta (Linn.), Cab. in Schomb. Guiana, iii. p. 751.

Not represented in Mr. Whitely's collection.

549*. CHENALOPEX JUBATUS.

Chenalopex jubatus (Spix), Cab. in Schomb. Guiana, iii. p. 762.

550*. DENDROCYGNA VIDUATA.

Dendrocygna viduata (Linn.), Cab. in Schomb. Guiana, iii. p. 762.

551*. DENDROCYGNA DISCOLOR.

Dendrocygna autumnalis, Cab. in Schomb. Guiana, iii. p. 762.

Dendrocygna discolor, Scl. & Salv. Nomencl. Av. Neotr. p. 161; P. Z. S. 1876, p. 375.

552*. DAFILA BAHAMENSIS.

Dafila bahamensis (Linn.), Cab. in Schomb. Guiana, iii. p. 763.

These four species of Anatidæ are not represented in Mr. Whitely's collection.

553. Cairina moschata.

Cairina moschata (Linn.), Cab. in Schomb. Guiana, iii. p. 763; Scl. & Salv. P. Z. S. 1876, p. 378.

R. Yuruani (2700 ft.), Roraima.

554. Columba speciosa.

Columba speciosa, Gm., Cab. in Schomb. Guiana, iii. p. 743; Knip & Temm. Pig. i. Columb. p. 39, pl. 14.

Bartica Grove, Camacusa, Roraima (3500 ft.).

555. Columba albilineata.

Columba albolineata, G. R. Gray in Brit. Mus. List Birds, iv. Columbæ, p. 34 (descr. nulla).

Chlorœnas albilineata, Bp. ex Gray, Consp. Av. ii. p. 51.

Roraima (6000 ft.).

The specimens from Roraima agree with our large series from the Andes and the southern part of Central America.

556. Columba rufina.

Columba rufina, Temm. Cab. in Schomb. Guiana, iii. p. 743.

Chlorœnas rufina, Bp. Consp. Av. ii. p. 52.

Bartica Grove, Roraima (3500 ft.).

557. Columba plumbea.

Columba plumbea, Vieill. N. Dict. d'Hist. N. xxvi. p. 358.

Columba locutrix, Wied, Knip et Prév. Pig. ii. p. 80, pl. 44.

Bartica Grove, Camacusa.

558. Columba vinacea.

Columba vinacea, Temm., Bp. Consp. Av. ii. p. 53.

Roraima, Bartica Grove, Camacusa.

559. Chamæpelia griseola.

Columbina griseola, Spix, Av. Bras. ii. p. 58, pl. 75 *a*. f. 2.

R. Yuruani, Roraima (3500 ft.).

560*. Chamæpelia passerina.

Chamæpelia passerina (Linn.), Cab. in Schomb. Guiana, p. 743; Baird, B. N. Am. p. 606.

Not represented in Mr. Whitely's collection.

561*. CHAMÆPELIA TALPACOTI.

Chamæpelia talpacoti (Temm.), Cab. in Schomb. Guiana, iii. p. 744.

Not represented in Mr. Whitely's collection.

562. ENGYPTILA RUFAXILLA.

Peristera jamaicensis, Cab. in Schomb. Guiana, iii. p. 744.

Colomba rufaxilla, Richard & Bernard, Act. Soc. Hist. Nat. Paris, i. p. 118.

Bartica Grove, Camacusa, Roraima (3500 ft.).

563. GEOTRYGON MONTANA.

Peristera montana (Linn.), Cab. in Schomb. Guiana, iii. p. 744.

Bartica Grove, Camacusa, Merumé Mountains, Roraima (3500 ft.).

564. CRAX ALECTOR.

Crax alector, Linn., Cab. in Schomb. Guiana, iii. p. 746; Scl. & Salv. P. Z. S. 1870, p. 514.

Camucusa.

565*. NOTHOCRAX URUMUTUM.

Crax urumutum, Spix, Cab. in Schomb. Guiana, iii. p. 746.

Nothocrax urumutum, Scl. & Salv. P. Z. S. 1870, p. 519.

Not represented in Mr. Whitely's collection.

566*. MITUA TUBEROSA.

Crax mitu, Linn. Syst. Nat. i. p. 270.

Mitua tuberosa (Spix), Scl. & Salv. P. Z. S. 1870, p. 520.

Urax erythrorhynchus, Sw., Cab. in Schomb. Guiana, iii. p. 747.

Not represented in Mr. Whitely's collection.

567*. MITUA TOMENTOSA.

Urax tomentosa (Spix), Cab. in Schomb. Guiana, iii. p. 746.

Mitua tomentosa, Scl. & Salv. P. Z. S. 1870, p. 520.

Not represented in Mr. Whitely's collection.

568. PENELOPE GREEYI.

Penelope greeyi, G. R. Gray, P. Z. S. 1866, p. 266, pl. 22; Scl. & Salv. P. Z. S. 1870, p. 523.

Salpiza marail, Cab. in Schomb. Guiana, iii. p. 745?

Bartica Grove, Camacusa, Roraima (3500–5000 ft.).

The specimens of *Penelope* sent home by Mr. Whitely all seem to belong to this species, a small form of *P. marail* with a more rufous abdomen. Not finding the true *P. marail* in these collections, it seems to me probable that Schomburgk's birds so named belong here.

569*. PENELOPE JACUCACA.

Penelope jacucaca, Spix, Scl. & Salv. P. Z. S. 1870, p. 523.

Salpiza jacucaca, Cab. in Schomb. Guiana, iii. p. 745.

A Brazilian species not represented in Mr. Whitely's collection, Schomburgk's specimen being doubtfully referable to it.

570*. PENELOPE CRISTATA.

Salpiza cristata (Linn.), Cab. in Schomb. Guiana, iii. p. 745.

Penelope cristata, Scl. & Salv. P. Z. S. 1870, p. 525.

Not represented in Mr. Whitely's collection. I have never seen Guianan specimens of this species.

571*. PIPILE CUMANENSIS.

Penelope pipile (Gm.), Cab. in Schomb. Guiana, iii. p. 745.

Pipile cumanensis (Jacq.), Scl. & Salv. P. Z. S. 1870, p. 529.

Not represented in Mr. Whitely's collection.

572. ORTALIS MOTMOT.

Ortalida motmot (Linn.), Cab. in Schomb. Guiana, iii. p. 744; Scl. & Salv. P. Z. S. 1870, p. 532.

Bartica Grove, Roraima (3500 ft.).

573*. EUPSYCHORTYX CRISTATUS.

Ortyx cristatus (Linn.), Cab. in Schomb. Guiana, iii. p. 747.

Eupsychortyx cristatus, Gould, Mon. Odontoph. pl. 9.

Not represented in Mr. Whitely's collection.

574. ODONTOPHORUS GUIANENSIS.

Odontophorus guianensis (Gm.), Cab. in Schomb. Guiana, iii. p. 747; Gould, Mon. Odontoph. pl. 23.

Bartica Grove, Merumé Mountains, Camacusa.

575*. Rallus longirostris.

Rallus longirostris, Bodd., Scl. & Salv. P. Z. S. 1868, p. 444.

Rallus crepitans, Linn., Cab. in Schomb. Guiana, iii. p. 760.

Not represented in Mr. Whitely's collection.

576. Aramides cayennensis.

Ortygarchus cayennensis (Gm.), Cab. in Schomb. Guiana, iii. p. 759.

Aramides cayennensis, Scl. & Salv. P. Z. S. 1868, p. 447.

Bartica Grove, Camacusa.

577*. Aramides axillaris.

Aramides axillaris, Lawr., Scl. & Salv. P. Z. S. 1868, p. 449.

Ortygarchus mangle, Cab. in Schomb. Guiana, iii. p. 760 (nec Spix).

Not represented in Mr. Whitely's collection.

578. Porzana albicollis.

Porzana albicollis (Vieill.), Scl. & Salv. P. Z. S. 1868, p. 451.

Crax mustelina, Licht., Cab. in Schomb. Guiana, iii. p. 760.

Roraima (3000 ft.).

579. Porzana cayennensis.

Porzana cayennensis (Gm.), Scl. & Salv. P. Z. S. 1868, p. 451.

Merumé Mountains, Roraima (3500–5000 ft.).

580. Porzana concolor.

Porzana concolor (Gosse), Scl. & Salv. P. Z. S. 1868, p. 452.

Merumé Mountains.

581. Thyrorhina schomburgki.

Crax schomburgki, Cab. in Schomb. Guiana, ii. p. 245, iii. p. 760.

Thyrorhina schomburgki, Scl. & Salv. P. Z. S. 1868, p. 458; Ex. Orn. p. 133, pl. 67.

Merumé Mountains, Roraima (3500 ft.).

582*. Porphyrio martinicus.

Porphyrio martinica (Linn.), Cab. in Schomb. Guiana, iii. p. 761; Scl. & Salv. P. Z. S. 1868, p. 459.

Not represented in Mr. Whitely's collection.

583*. Gallinula galeata.

Gallinula galeata, Licht., Cab. in Schomb. Guiana, iii. p. 760; Scl. & Salv. P. Z. S. 1868, p. 462; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 388.

Not represented in Mr. Whitely's collection.

584. Heliornis fulica.

Heliornis fulica (Bodd.), Scl. & Salv. P. Z. S. 1868, p. 469.

Podoa surinamensis (Gm.), Cab. in Schomb. Guiana, iii. p. 765.

Merumé Mountains, R. Yuruani (2700 ft.).

585*. Aramus scolopaceus.

Notherodius scolopaceus (Gm.), Cab. in Schomb. Guiana, iii. p. 759.

Not represented in Mr. Whitely's collection.

586. Eurypyga helias.

Eurypyga helias, Ill., Cab. in Schomb. Guiana, iii. p. 752.

Bartica Grove, Camacusa.

587. Psophia crepitans.

Psophia crepitans, Linn., Cab. in Schomb. Guiana, iii. p. 751.

Camacusa, R. Atapurau.

588*. Œdicnemus bistriatus.

Œdicnemus bistriatus (Wagler), Cab. in Schomb. Guiana, iii. p. 749; Scl. & Salv. Ex. Orn. p. 60.

Not represented in Mr. Whitely's collection.

589*. Parra jacana.

Parra jassana, Linn., Cab. in Schomb. Guiana, iii. p. 759.

Not represented in Mr. Whitely's collection.

590. Hoplopterus cayanus.

Hoplopterus cayanus (Lath.), Cab. in Schomb. Guiana, iii. p. 750.

Roraima.

591*. Vanellus cayennensis.

Vanellus cayennensis (Lath.), Cab. in Schomb. Guiana, iii. p. 750.

Not represented in Mr. Whitely's collection.

592. Charadrius virginicus.

Charadrius virginicus, Bechst. Allg. Ueb. der Vög. iii. p. 455; Cab. in Schomb. Guiana, iii p. 750.

Charadrius fulvus, var. *virginicus,* Coues, B. N. W. p. 450.

R. Yuruani (2700 ft.).

593*. Ægialitis semipalmata.

Ægialitis semipalmata (Bp.), Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 154.

Charadrius brevirostris, Neuw., Cab. in Schomb. Guiana, iii. p. 750.

Not represented in Mr. Whitely's collection.

594*. Ægialitis wilsonia.

Ægialitis wilsonia (Ord), Coues, B. N. W. p. 456.

Ochthodromus wilsonius, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 168.

Charadrius crassirostris, Spix, Cab. in Schomb. Guiana, iii. p. 750.

Not represented in Mr. Whitely's collection.

595. Ægialitis collaris.

Charadrius azaræ, Temm., Cab. in Schomb. Guiana, iii. p. 751.

Bartica Grove.

596*. Strepsilas interpres.

Strepsilas interpres (Linn.), Cab. in Schomb. Guiana, iii. p. 751; Baird, Brew. & Ridgw. Water-Birds N. Am. i. p. 119.

Not represented in Mr. Whitely's collection.

597*. Himantopus nigricollis.

Hypsibates nigricollis (Vieill.), Cab. in Schomb. Guiana, iii. p. 758.

Himantopus nigricollis, Scl. & Salv. P. Z. S. 1873, p. 454.

Not represented in Mr. Whitely's collection.

598. GALLINAGO FRENATA.

Scolopax frenata, Ill., Cab. in Schomb. Guiana, iii. p. 758.

Gallinago frenata, Scl. & Salv. Ex. Orn. p. 196.

Bartica Grove, Merumé Mountains, Roraima (3500 ft.).

599. GALLINAGO UNDULATA.

Gallinago undulata (Bodd.), Scl. & Salv. Ex. Orn. p. 196.

Scolopax paludosa, Gm., Cab. in Schomb. Guiana, iii. p. 758.

Merumé Mountains, Roraima (3500 ft.).

600*. MACRORHAMPHUS GRISEUS.

Macrorhamphus griseus (Gm.), Cab. in Schomb. Guiana, iii. p. 758; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 196.

Not represented in Mr. Whitely's collection.

601*. TRINGA CANUTUS.

Tringa canutus, Linn., Cab. in Schomb. Guiana, iii. p. 758; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 211.

Not represented in Mr. Whitely's collection.

602*. CALIDRIS ARENARIA.

Calidris arenaria, Ill., Cab. in Schomb. Guiana, iii. p. 759; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 249.

Not represented in Mr. Whitely's collection.

603*. EREUNETES PUSILLUS.

Ereunetes pusillus (Linn.), Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 205.

Ereunetes semipalmatus (Wils.), Cab. in Schomb. Guiana, iii. p. 758.

Not represented in Mr. Whitely's collection.

604*. SYMPHEMIA SEMIPALMATA.

Cataptrophorus semipalmatus (Linn.), Cab. in Schomb. Guiana, iii. p. 758.

Totanus semipalmatus, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 285.

Not represented in Mr. Whitely's collection.

605*. TOTANUS MELANOLEUCUS.

Totanus melanoleucus (Linn.), Cab. in Schomb. Guiana, iii. p. 757; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 269.

Not represented in Mr. Whitely's collection.

606. TOTANUS FLAVIPES.

Totanus flavipes (Wils.), Cab. in Schomb. Guiana, iii. p. 757; Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 269.

Bartica Grove, Camacusa.

607. RHYACOPHILUS SOLITARIUS.

Totanus solitarius (Wils.), Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 278.

Roraima (3500 ft.).

608. TRINGOIDES MACULARIUS.

Tringoides macularius (Linn.), Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 301.

Bartica Grove, Camacusa.

609*. NUMENIUS HUDSONICUS?

Numenius phæopus, Cab. in Schomb. Guiana, iii. p. 757.

It is probably to *N. hudsonicus* that Prof. Cabanis refers under the name of *N. phæopus*. It is not represented in Mr. Whitely's collection.

610*. RHYNCHOPS NIGRA.

Rhynchops nigra, Linn., Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 192.

Rhynchops melanurus, Cab. in Schomb. Guiana, iii. p. 761.

Not represented in Mr. Whitely's collection.

611*. STERNA MAGNIROSTRIS.

Sterna magnirostris, Licht., Cab. in Schomb. Guiana, iii. p. 761.

Not represented in Mr. Whitely's collection.

612*. LARUS ATRICILLA.

Xema atricilla (Linn.), Cab. in Schomb. Guiana, iii. p. 761.

Larus atricilla, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 254.

Not represented in Mr. Whitely's collection.

613*. PODICEPS DOMINICUS.

Colymbus dominicus, Linn., Cab. in Schomb. Guiana, iii. p. 765.

Podiceps dominicus, Baird, Brew., & Ridgw. Water-Birds N. Am. i. p. 438.

Not represented in Mr. Whitely's collection.

614. TINAMUS SUBCRISTATUS.

Trachypelmus subcristatus, Cab. in Schomb. Guiana, iii. p. 749.

Bartica Grove, Camacusa, Merumé Mountains, Roraima (3500 ft.).

615. CRYPTURUS VARIEGATUS.

Crypturus variegatus (Gm.), Cab. in Schomb. Guiana, iii. p. 748.

Bartica Grove, Camacusa, Merumé Mountains.

C. noctivagus, a species of South-eastern Brazil, is included in Prof. Cabanis's list of Schomburgk's collection; but it is open to doubt if it, as well as its near ally, *C. variegatus,* both occur in British Guiana.

616. CRYPTURUS PILEATUS.

Crypturus sovi (Gm.), Cab. in Schomb. Guiana, iii. p. 748.

Bartica Grove, Merumé Mountains, Roraima (3500 ft. ?).

In the next Number of this Journal I hope to conclude this paper with a summary showing the relationships of the Bird-fauna of this portion of Guiana with that of the rest of South America.

[To be continued.]

XXIV.—*Notes from Ceylon.* By H. Parker, F.Z.S.

The following Notes, which are supplementary to Col. Legge's 'Birds of Ceylon,' deal chiefly with distribution and nidification in the extreme south-east of Ceylon, the dates of the latter being, in many cases, very irregular, considering that the island is only about three-fourths of the size of Ireland.

Of the places mentioned, Tissa-mahārāma (Tissa), 20 miles north-east of Hambantota, and 6 miles from the sea, and Ramb-hara Wihāra (Ramb.), 9 miles from the sea, in a strip of heavy forest on the banks of the Wallawéganga, are in South-east Ceylon; while Vil-ānkulam (Vil.) is in the south-central part of the Northern Province. The months mentioned are those in which nests have now been found, mostly in addition to the dates previously published. Col. Legge's arrangement and nomenclature are followed.

Spilornis spilogaster (Blyth). April (Mannār), May (Tissa, young). In the former case an egg was lying in the nest without any lining. It is a rather broad oval, 3·39 in. by 1·84 in., and, as may be supposed, it exhibits a decided similarity to the egg of *Spizaetus ceylonensis.* The shell is rough and lustreless, dull white in ground-colour, thickly sprinkled with underlying spots of pale "brownish lake-red" (according to Syme's 'Werner's Nomenclature of Colours'), large and occasionally almost confluent in the large (or upper) half of the shell, and minute and paler in the other half. Irregularly scattered over these are broken spots and small blotches of "orange-coloured brown," varying from deep to pale in tone, and decidedly largest and most numerous in the upper half of the egg.

In the latter case, the nest, a substantial structure of sticks, nearly three feet wide, had a slight lining of two or three twigs with quite fresh green leaves on them. These are probably renewed every day. The nest contained a young bird, covered with white down; its iris was very dark grey, almost black; bill leaden black; cere leaden, almost as dark as the bill; feet lemon-yellow; claws bright black.

On the approach of a possible enemy, the eaglet behaved like other young diurnal Raptors, raising itself on its tarsus, extending its plumeless wings, and opening its mouth widely. Even a tame Tantalus, which bullied every thing else most unceremoniously, treated this helpless bird with respect after it had showed its apparent readiness to fight him.

POLIOAETUS ICHTHYAETUS (Horsf.). December (Vil.). A nest contained an eaglet in down and an addled egg, lying on a bed of fresh green leaves, which the bird was seen to renew daily. The egg, which is comparatively small, is a blunt oval, 2·51 in. by 1·98 in. It is rather rough in texture, and of a very pale cream-colour, almost white, with a faint gloss.

FALCO PEREGRINATOR (Sund.). A dark Falcon, with dull reddish underparts, which frequented Tissa for some weeks, was apparently this species: I was unable to approach it.

PALÆORNIS EUPATRIUS (Linn.). Feb. (Tissa). All the nests examined contained three young birds.

PALÆORNIS TORQUATUS (Bodd.). Feb. (Tissa), April (Ramb.).

PALÆORNIS CYANOCEPHALUS (Linn.). Feb. (Tissa). Found sparingly at Vil-ankulam.

PICUS MAHRATTENSIS (Lath.). May (Tissa), Feb. (Ramb.). Probably breeds throughout the year.

YUNGIPICUS GYMNOPHTHALMUS (Blyth). Feb. (Tissa), July (Vil.). A nest of this Pigmy Woodpecker was in a hole, 10 feet from the ground, in a dead branch three inches thick. The entrance was circular, and one inch in diameter. The cavity was excavated down the branch for 8 inches, and was 2 in. by 2¼ in. wide. Two eggs were lying on the bare wood. A second nest contained three eggs. They are very blunt ovals, with a slight gloss, and are pinkish when quite fresh, but become pure white when cleaned out. Average size ·62 in. by ·53 in.

BRACHYPTERNUS CEYLONUS (Forster). July (Tissa). Probably breeds throughout the year.

Brachypternus intermedius (Legge). This is the common Woodpeckerat Vil-ankulam. It feeds on the ground sometimes.

Phœnicophaes pyrrhocephalus (Forster). Plentiful at Ramb-hara Wihāra. At the end of March some birds had paired, and dissection showed that the breeding-season was not distant; it may be in May.

Harpactes fasciatus (Forster). Plentiful at Ramb-hara, and in forest north-east of Vil-ankulam.

Anthracoceros coronatus (Bodd.). Three eggs of this Hornbill, taken in dense forest in June, were brought to me at Vil-ankulam. The men who took them stated that the hole was plastered up, as usual with Hornbills, and that one of the birds (which they ate) was inside.

The eggs, which are decidedly small for such a bird, are typical ovals. They are glossless, and of a very coarse texture (but not chalky), with many pit-marks of varying shapes and sizes. Writing on them seemed like writing on stone. Their colour is a dull brownish, deep grey cream. possibly once nearly white and now discoloured; many of the pit-marks are stained by dirt, which gives the shell a spotted appearance. In a suitable position the eggs exhibit a sub-spotting of white, apparently caused by small portions of shell with a finer texture than the rest. The lining is white. Two measure 2·04 in. by 1·53 in.; the other is 1·96 in. by 1·48 in. Fortunately they were hard-set, so that the young birds could be identified; these had the usual large bills, but of course no "horn."

Ceyx tridactyla (Pall.). This lovely Kingfisher apparently frequents all the streams of the drier "low-country" districts. One flew through my room at Ramb-hara Wihāra.

Merops swinhoii (Hume). March, April (Tissa).

Caprimulgus asiaticus (Lath.). June (Tissa), July (Vil.), August (Hamb.), October (Mannār).

Lanius cristatus (Linn.). Twice recorded at Tissa on October 7th; it leaves at the end of April.

Lanius caniceps (Blyth). In November 1884, I met with one of these Shrikes at Udukiriwila, 10 miles inland from Tangella, S.P.

Buchanga atra (Hermann). This Drongo is resident at Vil-ankulam.

Rhipidura albifrontata (Frankl.). March, June, July (Tissa).

Alseonax muttui (Layard). Not uncommon at Ramb-hara Wihāra. During March the yong males were just beginning to utter a very low and not unpleasing song. The birds were quite tame, and when only a few yards from me would sing for nearly half an hour at a time, occasionally stopping to catch a passing insect.

Cittocincla macrura (Gm.). June (Vil.), July (Tissa). Two nests contained three eggs each, not distinguishable from those of the Magpie-Robin. One nest was in the hollow end of a broken branch, quite close to a path along which numerous carts and people had been passing daily for some weeks. A nestling which I tried to rear had the usual spotted plumage of young Robins, the white feathers being like those of the adult.

Dumetia albogularis (Blyth). Febr., May, June, Nov. (Tissa). Probably breeds throughout the year.

Alcippe nigrifrons (Blyth). June, August, Sept. (Vil.). In the north nearly all the eggs are laid in May and June, according to my experience.

Pellorneum fuscicapillum (Blyth). The egg figured in the 'Birds of Ceylon' appears to be that of a *Drymœca* (*D. valida* or *D. jerdoni*).

Pyctorhis nasalis (Legge). Febr., July, Nov., Dec. (Tissa). Appears to breed throughout the year.

Prinia hodgsoni (Blyth). Jan., May (Tissa). Probably throughout the year. This is the common *Prinia* in all South-east Ceylon. The five or six nests that I have seen were made inside one or two leaves, near the ground, and the eggs were unspotted.

Drymœca valida (Blyth). Breeds throughout the year in South-east Ceylon. Two to four eggs, but usually three.

Drymœca jerdoni (Blyth). Breeds throughout the year in South-east Ceylon. Two to four eggs, but usually three.

Acrocephalus stentorius (Hemp. & Ehr.). July (Tissa). Permanent at Tissa-maharama.

Dendrophila frontalis (Horsf.). April (Ramb-hara)

Piprisoma agile (Tickell). Occurs at Ramb-hara.

Hirundo rustica (Linn.). Arrives at Tissa from August 30th to Sept. 12th, and leaves at the end of April. These Swallows sleep in immense numbers in the bulrushes there, arriving in flocks before dusk. Before returning, they amuse themselves by rapid evolutions, high and low in the air, sometimes flying in a wide continuous band or ring over their sleeping-quarters. As it grows dusk they suddenly drop into the rushes. Probably they come from great distances; very few are visible in the neighbourhood during the day.

Limonidromus indicus (Gm.). Recorded at Tissa on Sept. 20th, but it may arrive a little earlier.

Ploceus manyar (Horsf.). Frequents reeds from Tissa to Udukiriwila. At the former place this Weaver-bird is now much more numerous than *P. philippinus*; but the increase must have occurred during the last five or six years, after the repair of the irrigation works, since Col. Legge did not observe the bird there. Probably there are two chief breeding-seasons (as in the case of *P. philippinus*), at the times when the paddy-crops ripen, one in March, April, and May, and the other in July, August, and September; but eggs can be taken throughout most of the year. The eggs are always three in number. The tube of the nest appears to be added only after they are laid. Every Weaver-bird's arrival in the colony is received with great enthusiasm, exhibited by an active fluttering of wings and much miscellaneous noise.

Acridotheres melanosternus (Legge). August, Nov. (Tissa), July, Nov. (Vil.). Appears to breed throughout the year.

Eulabes ptilogenys (Blyth). Not uncommon at Rambhara Wihara.

Columba intermedia (Strickl.). June (S.E. coast).

Coturnix chinensis (Linn.). August (Tissa).

Gallinula chloropus. March, June, July (Tissa). The Moorhen shows great mobility of habits in Ceylon. In the north-west (Mannār district only) it is numerous and a regular migrant; in the extreme south-east it is numerous and a permanent resident; while throughout the rest of the island it is only known as one of the rarest species, and, so far as I am aware, no addition has been made to the three specimens recorded in the 'Birds of Ceylon.' Considering the size of the island, this appears to be an abnormal distribution.

In the north-west this bird is excessively shy, it is rarely found near the shore, it is almost impossible to flush, and it never leaves the dense sedge in which it hides. In the south-east, on the contrary, it is as tame as in England, it is quite commonly found near the margins of open sheets of water, and it flies at once on being frightened. Finally, it has been known to breed—once at Mannār, and twice at Tissa.

Feb.: ♂ (Mannār, breeding). Length 13·30 inches; expanse 21·30; wing 6·70; tarsus 1·95; tail 3·20; bill 1·20.

June: ♀ (Tissa, breeding). Length 13·40 inches; expanse 21·62; wing 6·72; tarsus 2·10; tail 3·40; bill from gape 1·15.

Porphyrio poliocephalus (Lath). July (Tissa). As Col. Legge records it in the early part of the year, the Blue Coot must have two broods in the south-east.

The nestling is black-haired. It has a white bill, the base being crimson at the sides; purple or lilac casque; reddish-purple legs; lilac toes; spur on the winglet lilac and very prominent.

Hydrophasianus chirurgus (Scopoli). April, June, July (Tissa). The nest is a small shallow patch of weeds on the water. The young nestling is black, with a bright brown streak down the middle of the head and back, and another down each side. Iris dark brown, nearly black.

Esacus recurvirostris (Cuv.). March (to east of Tissa).

Podiceps fluviatilis (Tunst.). May (young), June (Tissa). A floating nest of weeds.

Dendrocygna javanica (Horsf.). June, July (Tissa). One nest in long grass, on the surface of the water, was cleverly domed.

Phœnicopterus roseus (Pall.). According to natives who have correctly described the nest of the Flamingo, the breeding-season is early in the year, about March, in the south-east.

Xenorhynchus asiaticus (Lath.). Mr. Byrde, Assistant Government Agent at Mannār, obtained two young birds last year, about March, from a nest in his district. They are quite tame, and stalk about near his house.

Herodias alba (Linn.). The bill of the Great Egret is yellow in the breeding-season.

Herodias intermedia (Wagler). The bill of this Egret is yellow in the breeding-season.

XXV.—*Notices of Recent Ornithological Publications.*

[Continued from p. 98.]

30. *Adrianof on the Birds of North-western Mongolia.*

[Ocherki Severo-Zapadnoi Mongolii. G. N. Potanin. Vypusk iii. St. Petersburg: 1883. 8vo.]

The above is as much as need be given of the Russian title of M. Potanin's report of his travels in North-western Mongolia in 1879–80, through a region of large lakes receiving the drainage of the mountain-ranges on the confines of Russia and China. At pp. 241–243 is a list of the species of birds, 37 in number, examples of which were collected by Mr. Adrianof. This list, although containing nothing very remarkable, forms an addition to our knowledge of the avifauna of that almost unexplored country.

31. '*The Auk.*'

['The Auk,' a Quarterly Journal of Ornithology. Vol. III. No. 1. January 1886.]

Nearly half the present Part is devoted to an important *résumé* of the Birds of the West Indies by Mr. C. B. Cory, so well known for his labours on the ornithology of the Antilles. Mr. Edgar A. Mearns sends notes of his observations in Arizona on the Zone-tailed Hawk (*Buteo abbreviatus*) and the Mexican Black Hawk (*Urubitinga anthracina*); Mr. Henshaw concludes his list of Birds observed in New Mexico; and Mr. W. E. D. Scott contributes a fifth paper on the breeding-habits of some Arizona Birds, so that the south-western section of North America is receiving its fair share of attention. From the first instalment of an interesting paper by Mr. Evermann, on the Birds of Ventura County, California, we learn that not only is the Barn-Owl (*Strix flammeus americanus*) gregarious in winter to the extent of consorting in flocks of upwards of fifty, but that it also nests in the holes of the *barrancas* in such close proximity that eleven nests were dug into, involving some time and labour, in a single day. Mr. William Brewster commences an account of his experiences in the western portion of North Carolina, a mountain-region which, with the adjacent portions of Georgia and South Carolina, may be said to have formed a *terra incognita* to the ornithologist, although not unvisited by the tourist and sportsman. Two new subspecies are distinguished—*Junco hyemalis carolinensis* and *Vireo solitarius alticola*.

Among the General Notes, a communication by Mr. W. A. Jeffries will be read with interest owing to its bearing upon the question of migration, which is now receiving so much attention. Mr. Jeffries states that at 2 P.M. on the 8th of last May, when two days and a few hours outward-bound from New York, and more than 600 miles from land, scattered flocks of Sandpipers were observed, all flying strongly, nor swerving from their course in any way, and in a S.E. by E. direction! This, if persisted in, would have landed them in Africa; but perhaps the weather, which was somewhat foggy, may have been responsible for this erratic proceeding in the month of May.

32. *Barnes on the Birds of the Bombay Presidency.*

[Handbook to the Birds of the Bombay Presidency. By Lieut. H. Edwin Barnes, D.A.C. 8vo. Calcutta: 1885.]

Mr. Barnes's Handbook is a concentration into one volume of "Jerdon," or at least of such portions of it as relate to the Birds of the Bombay Presidency. Its object is to place within the reach of all the author's fellow-workers in that part of India "a book that will enable them to identify any bird they may meet with." This object, we think, Mr. Barnes has carried out successfully, although it is obvious that by following so closely the method and arrangement of a book that was published so many years ago he has, in many cases, sacrificed correctness to convenience. Mr. Barnes has been a careful observer of bird-life during his twenty years' residence in India, and his notes on this branch of his subject may be confidently relied upon.

33. *Beckham on some Kentucky Birds.*

[List of the Birds of Nelson County. By Charles Wickliffe Beckham. Kentucky Geol. Surv. September 1885.]

In 1883 Mr. Beckham published a list of the birds of Nelson County, Kentucky, in the Journal of the Cincinnati Society of Natural History. Upon this is based the present paper, which has been prepared to accompany a report on the geology of the district. The list contains the names of 171 species. The accompanying observations were mostly made in the vicinity of Bardstown, which is situated "just on the western limit of the 'Blue-grass Region,' forty miles south-east of Louisville."

34. *Blomefield's 'Reminiscences of Selby.'*

[Reminiscences of Prideaux John Selby, and Twizell House; also brief notices of other North-country Naturalists. By Leonard Blomefield (late Jenyns). 8vo. Bath: 1885. (For private circulation.)]

We have already noticed (Ibis, 1885, p. 441) the 'Reminiscences of Yarrell' by the veteran Mr. Blomefield, and we have now before us a similar but more extensive pamphlet containing his experiences of Selby and others. The author paid four visits to Twizell, making several excursions with Selby in the neighbouring part of Northumberland, on one of which he was present at the third anniversary of the Berwickshire Naturalists' Club, the first of those associations for observations in the field which have since increased in number, and have, in an unpretending manner, fostered an interest in natural history. Selby's fine collection of birds remains at Twizell House, the property of Selby's third daughter, Lady Tancred; but at one time it was found to be in a sadly neglected state, and although Mr. Blomefield has been told that its preservation for the future has been assured, he remarks regretfully that the place is no longer to be thought of in connection with naturalists and natural-history pursuits.

35. *Booth on British Birds.*

[Rough Notes on the Birds observed during Twenty Years' Shooting and Collecting in the British Islands. By E. T. Booth. With Plates from Drawings by E. Neale, taken from specimens in the Author's possession. Parts V.–IX. Folio. London: 1883–85.]

We have unavoidably allowed several of these numbers to remain unnoticed, and now we can only enumerate those species which are regarded by the author as of sufficient importance to be figured. Part V. contains two plates of the Red-breasted Merganser, adults and young, and six excellent illustrations of the successive stages of plumage in the Gannet. In Part VI. we see Mr. Neale at his best in his delineations of Ptarmigan (3 plates), compared with which the 4 plates of the Arctic Skua seem somewhat flat. In Part VII. he is again very happy in his 3 plates of the Eider, and the 2 of the Goosander, the young of which just emerging from the downy stage have never, we believe, been figured before—certainly never so well. The phases of plumage in the Pomatorhine Skua are interesting. Part VIII. contains Montagu's Harrier (2 plates), Woodcock (2 plates), and 1 plate each of the Whooper, Pochard, Goldeneye, and Long-tailed Skua. In Part IX. 3 plates are devoted to the Shoveller, and 1 each to the Dotterel, Black-tailed Godwit, Great Crested Grebe, Great Black-backed Gull, and Fulmar. The letterpress relating to these and to many other species is excellent.

36. *Canadian Record of Science.*

[The Canadian Record of Science, including the Proceedings of the Natural History Society of Montreal, and replacing the Canadian Naturalist. Vol. I. Nos. 2-4.]

It could hardly be expected that a journal of this kind would contain much ornithological matter, but we observe an article in No. 4, by Mr. C. N. Bell, which gives an interesting account of the "Dance of the Prairie Chicken" (*Pediœcetes phasianellus*).

37. *Cory's New List of West-Indian Birds.*

[A List of the Birds of the West Indies, including the Bahama Islands and the Greater and Lesser Antilles, excepting the Islands of Tobago and Trinidad. By Charles B. Cory. Revised Edition. 4to. Boston, U.S.A.: 1886.]

This is a new and revised edition of the useful list of West-Indian Birds, of which we have spoken in last year's volume (Ibis, 1885, p. 443). The names are arranged in systematic order, and the localities only are added. A few additional tables showing the species peculiar to each individual island would have increased the usefulness of the work.

38. *Dalgleish on the Birds of Culross and Tulliallan.*

[List of the Birds of Culross and Tulliallan. By John J. Dalgleish. Forming the Appendix to 'Culross and Tulliallan; or, Perthshire on Forth: its History, Antiquities,' &c. By David Beveridge. 8vo. Edinburgh: 1885.]

The natural features of the above district, including the opposite shores of the Firth of Forth, present considerable variety, which will account for the number of species (152) mentioned in the list. The author's observations extend over more than thirty years, and are supplemented by notes on the Waders and Water-fowl of the Firth by Mr. Harvie-Brown. The remark implying that the breeding-range of the Stock Dove in Scotland was not known to extend beyond Dunkeld, was probably written nearly two years ago, and Mr. Dalgleish is doubtless by this time well aware that the bird nests in the rabbit-warrens near Nairn and Forres on the sandy shores of the Moray Firth.

39. *Des Murs on European Birds.*

[Musée Ornithologique Illustré.—1. Les Oiseaux de Rivage et de Terre; 2. Les Oiseaux d'Eau:—Classification, Synonymie, Description, Mœurs des Oiseaux d'Europe: leurs Œufs, leurs Nids. Par O. Des Murs. 2 vols. Royal 8vo. Paris: 1886.]

These two imposing volumes are illustrated by 145 "chromotypographies," taken, with scarcely an exception, from the illustrations to Morris's 'British Birds' and the 'Nests and Eggs of British Birds,' and Bree's 'Birds of Europe not observed in the British Islands.' We have seldom seen appropriation accompanied by so many blunders in the taking. The brown egg of the Common Bittern is attributed to the Little Bittern, and *vice versâ*; the pale blue egg of the Night-Heron is given to the Spoonbill, while the egg of the latter is placed under the Glossy Ibis; the eggs of the Curlew and the Whimbrel are transposed, as are those of the Greenshank and the Dusky Redshank, and so on *ad infinitum*. The letterpress is in no respect an advance upon Degland and Gerbe's 'Oiseaux d'Europe,' published nearly twenty years ago. We are unfeignedly grieved to see such a book associated with the name of the author of the 'Oologie,' a work in which an attempt was made to classify birds by their eggs.

40. *Finsch and Meyer on new Paradise-birds.*

[Vögel von Neu Guinea, zumeist aus der Alpenregion am Südostabhange des Owen Stanley-Gebirges (Hufeisengebirge, 7000–8000′ hoch), gesammelt von Karl Hunstein, bearbeitet von O. Finsch und A. B. Meyer. I. Paradiseidæ. Zeitsch. f. d. gesamm. Ornith. 1885, p. 369.]

Of this very interesting paper we are, with the kind permission of the authors and Dr. J. v. Madarász, preparing a translation, which will appear in our next number. Meanwhile we may state that the new species described are:—*Phonygama purpureo-violacea, Astrarchia stephaniæ, Epimachus meyeri, Paradisea finschii, Paradisornis rudolphi,* and *Diphyllodes hunsteini.* Of these, the first two and last two are figured, as is also the splendid male of *Amblyornis subalaris,* Sharpe.

41. *Giglioli and Manzella on Italian Birds.*

[Iconografia dell' Avifauna Italica, ovvero Tavole illustranti le specie di Uccelli che trovansi in Italia, con brevi descrizioni e note. Testo del Dott. Enrico Hillyer Giglioli. Tavole di Alberto Manzella. Fasc. XIX.–XXVII. Folio. Prato: 1882–84.]

The above parts of this work have reached us since our last notice of it (Ibis, 1883, p. 378). The letterpress continues to be all that might be expected from its author, and amongst the rarer species we notice the description and figure of the specimen of *Querquedula formosa* obtained, for the first time in Italy (near Modena), in January 1882.

42. *Gould's 'Birds of New Guinea.'*

[The Birds of New Guinea and the adjacent Papuan Islands, including any new Species that may be discovered in Australia. By [the late] John Gould, F.R.S. &c. Part XX. Folio. London: 1885.]

The twentieth Part of this great work, with the letterpress, as before, by Mr. R. B. Sharpe, contains illustrations by W. Hart of the following species:—

Paradisea decora.
Cacatua triton.
—— ophthalmica.
Œdistoma pygmæum.
Ptilotis albonotata.
Rhamphocharis crassirostris.
Euthyrhynchus flavigula.
Euthyrhynchus fulvigula.
—— griseigula.
Rectes leucorhynchus.
—— cerviniventris.
Calornis gularis.
Stigmatops chloris.

The Grey-chested Paradise-bird is, it will be remembered, the magnificent species discovered by Mr. A. Goldie in the D'Entrecasteaux Islands, and first figured in this Journal for 1883, pl. viii.

43. *Lawrence on Birds from Yucatan.*

[Description of a new Species of Bird of the Genus *Engyptila*, with Notes on two Yucatan Birds. By George N. Lawrence. Ann. N. Y. Acad. Sci. iv. p. 271.]

Mr. Lawrence describes a new Pigeon, from a specimen obtained by Mr. G. F. Gaumer in Yucatan, as *Engyptila vinaceifulva*, and states that it "does not resemble any other member of the genus." Mr. Lawrence takes this opportunity to vindicate the claims of his *Leptoptila fulviventris*, from the same country, to rank as a good species: Mr. Salvin (P. Z. S. 1883, p. 434) could not distinguish it from *Leptoptila albifrons*. Mr. Lawrence also gives further details concerning his *Chætura gaumeri*, from three additional specimens received from Mr. Gaumer.

44. *Murdoch on the Birds of Point Barrow.*

[Report of the Expedition to Point Barrow, Alaska. By Lieut. P. H. Ray, U.S. Army. Birds by John Murdoch, A.M., Sergeant Signal Corps, U.S. Army, pp. 104–128 and 200. 4to. Washington: 1885.]

This report contains details of exceptional interest respecting the birds observed at the most north-western American Station, situated on the Arctic Sea in 71° 23′ lat. N., and 156° 40′ long. W. It is an Eskimo settlement, discovered during the voyage of H.M.S. 'Blossom' in 1826, visited by Capts. Dease and Simpson of the Hudson's Bay Company's service, who determined the coast-line from the mouth of the Mackenzie River to Bering Sea, and was also the winter-quarters of H.M.S. 'Plover' in 1852–1854; but, with the exception of a note by the late Dr. Adams (P. Z. S. 1859, p. 130), little was known of its fauna. Nearly all the birds and eggs collected by the American Expedition during their stay, from the autumn of 1881 to that of 1883, were obtained within a circle of fifteen miles from the station, in a country which is described as a slightly rolling "tundra" studded with lakes and ponds; and although the species are little more than fifty in number, several are worthy of special notice. Among the latter is one of the group of Great Northern Falcons, bearing the somewhat cumbrous name of *Hierofalco gyrfalco sacer*, Ridgw.; and the breeding-habits and nest of the Pectoral Sandpiper (*Tringa maculata*) are now fully described by the finder of the eggs, one of which has been figured in Mr. Seebohm's 'British Birds' (pl. 68), from a specimen lent by the Smithsonian Institution. The Buff-breasted Sandpiper (*Tryngites rufescens*) was also abundant from the early part of June, depositing its eggs on the higher and drier parts of the tundra, and never in the lower marshy portions. The most abundant bird was the King Eider (*Somateria spectabilis*), flights of thousands passing still further northwards from the latter part of April, comparatively few remaining to breed in the vicinity of the settlement; and on the return-migration in autumn the numbers were not nearly so great. Most interesting of all, however, is the description of Ross's Gull (*Rhodostethia rosea*), with two coloured plates illustrating two stages of plumage in this once rare bird, far more specimens of which were obtained at Point Barrow than previously existed in all the museums and collections put together. None were obtained in spring; but in September and October large flights, consisting principally of birds of that same year, approached the shore from the south-west, travelling in a north-easterly direction. Nor were any seen to return; but the supposition is that they retrace their course, when out of sight of land, on meeting the pack-ice, on the edge of which they pass the winter; and it is suggested that one of their breeding-grounds may be on some undiscovered land north of Wrangel Island. The captain of a whaler, considered to be a trustworthy witness, who reported having seen large numbers over loose ice north-west of Cape Hope (say in about 69° N. lat.) on June 10th, 1883, was probably not far from some land where they would breed. With the return of the expedition the chance of obtaining thoroughly identified eggs and young in down is indefinitely postponed; for although two fine adults (one of them now in Mr. Seebohm's possession) appear to have been obtained last summer near Disco, in Greenland, further information is wanted as to the egg said to have been taken with them. At p. 200 of this interesting report, of which we have only given a brief abstract, is a list of a few birds observed at Plover Bay, Eastern Siberia.

45. *Menzbier on the Posthumous Works of Severtzoff.*

[Œuvres Posthumes de M. le Dr. N. A. Sewertzow, publiées par la Société Impériale des Naturalistes de Moscou, rédigées par M. M. Menzbier. I. Zwei neu oder mangelhaft bekannte russische Jagdfalken. II. Etudes sur les variations d'âge des Aquilinés paléarctiques et leur valeur taxonomique. Nouv. Mém. Soc. Imp. d. Nat. d. Moscou, tome xv. livr. 3 (1885).]

In the former of these two articles the group of the Great Northern Falcons is discussed by the late Professor whose name we retain in the orthography familiar to our readers. The single specimen from Bering * Island, on which is based the *Hierofalco grebnitzkii*, sp. n., to judge by the pretty figure and description, does not seem to depart very materially from the form which is usually known to European ornithologists as *Falco islandus*; and so thinks Dr. Stejneger, who himself obtained four examples of the Bering Island *Grey* Falcon, besides a fifth received from Mr. Grebnitzky, though, in accordance with the view before announced (Auk, 1885, p. 187), Dr. Stejneger names it *F. rusticolus*, considering *F. islandus* to be that which in this quarter of the globe has usually been called *F. candicans* or *grœnlandicus*. The second supposed new species, *Hierofalco uralensis*, has already been noticed in these pages (Ibis, 1883, p. 105). We should doubt its being more than a local form of *F. gyr-*

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* Mr. Menzbier continues the cacography "Behring," notwithstanding proof that the navigator's name was Bering, as may be seen in Mr. Elliot's 'Fur Seals of Alaska' and other works of authority. But it is probably "Behring" *auctorum plurimorum*, and those who choose to follow a multitude to do evil will continue to misspell it.

falco, but generally paler in colour. As an immature example was formerly figured, it is a pity that we have not now in addition the representation of an adult. As regards the second paper, it is only the commencement of a treatise which will not be finished until this year. After that, perhaps, Mr. J. H. Gurney will give us the benefit of his views upon the entire subject, which is a somewhat wide one. Severtzoff's 'Ornithologie de Turkestan' will, we are told, form a separate volume.

46. '*The Naturalist.*'

['The Naturalist:' a Journal of Natural History for the North of England. Edited by W. D. Roebuck and W. E. Clarke. Nos. 116–128.]

We are glad to see, in Nos. 117 and 118, the continuation and conclusion of the useful bibliography of papers for 1884, relating to the Birds of the North of England, to which we have already drawn attention (Ibis, 1885, p. 230), while interesting communications from various well-known ornithologists are not wanting. Messrs. Clarke and Cordeaux keep us informed as to the arrivals and migrations on the east coast; Mr. J. Backhouse, jun., sends notes on the Birds of Upper Teesdale; Mr. Alfred C. Chapman contributes some interesting experiences of the Northumberland coast birds; and Mr. Armistead treats of those of the Solway district. Mr. Southwell states that a previously unrecorded specimen of the Whiskered Tern (*Hydrochelidon hybrida*), formerly in the collection of the late Mr. Rising, of Horsey, near Yarmouth, was obtained in 1842 at Hornby Castle, on the Swale, in Yorkshire, probably the most northern occurrence of this species. A note by Mr. Archer, on a Spotted Eagle killed on 31st October last, in Northumberland, is followed by an article by Mr. J. H. Gurney, on the two races or subspecies of Spotted Eagle found in Europe, the Northumberland example being referred to the larger form, known as *Aquila clanga*. Many of the minor notes are interesting, and 'The Naturalist' shows no signs of flagging.

47. *Newton's Memoir of the late John Scales.*

[Memoir of the late John Scales. By Alfred Newton, M.A., F.R.S. Trans. Norfolk and Norwich Nat. Soc. vol. iv. p. 81.]

Ornithologists, especially those of Norfolk, are much indebted to Professor Newton for this interesting memoir of a naturalist who was of an East-Anglian family, although actually born in Yorkshire. The early life of John Scales was decidedly eventful; for, strange as it may appear, a man with whom some of our readers were well acquainted was captured as a lad by a French cruiser on a voyage from Hull to London, and detained in France until ransomed by his father! In 1812 his assistance was required in the management of the large farm and warren of Beachamwell; and thenceforth his name became associated with Norfolk, especially, as readers of Stevenson's 'Birds of Norfolk' will remember, as regards the Great Bustard. He made several excursions to the continent, however, on one of which he obtained the richly marked Great Auk's egg which was the gem of his oological collection; he also visited Switzerland, and Valkenswaard, the head-quarters of falconry, in Dutch Brabant. Unfortunately his collections, papers, and correspondence were destroyed by a fire more than twenty years ago; and as Scales seldom communicated the results of his researches to any of the magazines of natural history, there is every reason to be thankful to Professor Newton for the fragmentary remains which have been preserved. The longest and most interesting letters are those addressed to the writer of the Memoir, principally about the Great Bustard; but there are many notes on other species. For instance, writing in May 1856, Scales says that he never knew of the Woodlark breeding in Norfolk, nor did he ever see one in his part of the county, and he was inclined to think that it was a new comer; in which he agreed with Professor Newton, whose subsequent experience has been that, although local, the species is not uncommon, and breeds annually in some parts of the above county and of Suffolk. Scales left Norfolk in 1842, and in

1844 was elected the first Principal of the Royal Agricultural College at Cirencester, subsequently undertaking the management of some estates in Ireland, where he continued his natural-history pursuits; but his collections, books, and papers were lost through a fire at Cork. He died at Brighton on 25th September, 1884, in his ninety-first year.

48. *Olphe-Galliard on the Birds of Western Europe.*

[Contributions à la Faune Ornithologique de l'Europe Occidentale. Par Léon Olphe-Galliard. Fasc. xxxiii., Mars 1885; Fasc. v., Juin 1885. 8vo. Bayonne.]

The first Part of this work (*cf.* 'Ibis,' 1885, p. 231) could not well avoid its title; but it will be observed that in the subsequent issues the numeration is as far as possible from being consecutive. We have hitherto deferred our notices of the above two Parts, in the hope that some more would have appeared to fill up the gaps, but none have reached us, nor do we think that any others have been published. The former of the two now before us treats of the Ploceidæ, "an African family, with the exception of the Sparrows, which are their representatives in Europe." The latter Part in date of issue contains Family V., Cygnidæ; the author adopting Wagler's genus *Olor* for the *Cygnus musicus* &c. group, but advocating the orthography *Holor*, in which we do not think he will have many followers.

49. *Palacky on the Distribution of Birds.*

[Die Verbreitung der Vögel auf der Erde. Monographie von Dr. Johann Palacky. 8vo. Wien: 1885.]

After some preliminary remarks, the author takes Gray's 'Hand-list,' and reviews the distributions of the 11,162 species therein mentioned in 70 different groups. In a second section Dr. Palacky treats of his subject geographically, and divides the world ornithologically into four principal divisions (America, the Palæarctic Region, Africa, Australia), with a number of subdivisions to each. The treatise appears to us to be rather that of a compiler than of one drawing his conclusions from original work; but this is, perhaps, a necessity of the case.

50. *Sharpe and Wyatt on the* Hirundinidæ.

[A Monograph of the Hirundinidæ, or Family of Swallows. By R. Bowdler Sharpe and Claude W. Wyatt. Part II. December, 1885. London: Sotheran & Co.]

The second number of this Monograph, which appears to be quite up to the standard of its predecessor, contains figures and descriptions of *Hirundo senegalensis, H. æthiopica, H. domicella, Chelidon dasypus, Cotile fuligula*; a figure of the young of *Chelidon urbica*; and the description only of *Hirundo gordoni,* which is regarded as merely a small race and West-African representative of *H. semirufa.*

51. *Smithsonian Report for* 1883.

[Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution for the year 1883. Washington: 1885.]

The 'Report of the Smithsonian Institution for 1883' contains (pp. 220–225) Mr. Ridgway's Report on the Department of Birds of the National Museum of the U.S. The total number of specimens entered on the Museum Register during that year was 3631. Among these most important accessions are specified. The account of the "explorations" (p. 11 *et seq.*) will also be read with interest, as likewise Prof. Gill's record of the progress of Zoology in 1883. It seems a great pity that, owing, we believe, to official exigencies, the Smithsonian Reports cannot be rendered available to the world in general at an earlier date. Thus we do not receive the Report for 1883 until the end of 1885.

52. *Stejneger on the Birds of the Commander Islands and Kamtschatka.*

[Results of Ornithological Explorations in the Commander Islands and in Kamtschatka. By Leonhard Stejneger. Bull. U.S. Nat. Mus. no. 29. 1885.]

This is the official report of Mr. Stejneger's ornithological observations in the Commander Islands and Kamtschatka, during his expedition of 1882–83, of which we have already spoken (see 'Ibis,' 1885, p. 116). It contains (1) a review of the species of birds collected or observed in these two localities; (2) a synopsis of Kamtschatkan birds; and (3) the author's "conclusions"—three essays which are certainly worthy of careful attention. The species collected or observed in the Commander Islands and Kamtschatka by Mr. Stejneger were 140 in number, of which 35 were Passeres. Full details are given of the synonymy and nomenclature of each of them, besides an account of their habits and method of occurrence in the districts spoken of. We fear, however, that some consternation will be caused on this side of the Atlantic by the names employed in certain cases. These names are stated to have been arrived at on the principles laid down by the American Ornithologists' Union, and, as the author candidly admits, will be found to deviate "not inconsiderably" from those usually adopted*. Very full and interesting accounts are given of the Auks and Puffins of the Northern Pacific and their curious seasonal changes, which are illustrated by several coloured plates. "*Charitonetta*" is proposed as a new generic name for *Anas albeola*, Linn.

In the Synopsis of Kamtschatkan Birds, which forms part ii. of the volume, 186 species are included, and two more are added in an Appendix, on Dybowski's authority.

In the "conclusions" the general facies of the avifauna of this part of the world is discussed; and it is shown that the Ornis of the Commander Islands is chiefly Kamtschatkan, "since only 11 species have been taken in them which do not belong to the Kamtschatkan fauna."

53. *Taczanowski's Ornithology of Peru.*

[Ornithologie du Pérou. Par Ladislas Taczanowski. Tome troisième. Rennes: 1886.]

Our congratulations are due to M. Taczanowski on the issue of his third and concluding volume of the 'Ornithology of Peru.' No such important work upon the birds of the Neotropical Region has appeared since Pelzeln's 'Ornithology of Brazil.' We have here the results of the various expeditions of MM. Jelski and Stolzmann, collected in a uniform shape, and combined with those of the many other authors who have treated of Peruvian ornithology.

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* As the author is a stickler for correct names, it may be remarked that "*Eniconetta*" (p. 170) should be written "*Heniconetta*," the derivation being ἑνικός, singular, and that "*Somateria v-nigra*" (*op. cit.* p. 173) was properly altered by Bonaparte to *S. v-nigrum*, as the adjective should agree with the neuter "v," not with the feminine "*Somateria*." Again, the generic term "*Aythya*," if used, should be transliterated "Æthyia," from the Greek *αἴθυια*.

The number of species to be attributed to the avifauna of Peru, according to M. Taczanowski's researches, is 1349, which, though large when we consider the extent and variety of elevation of the country, is not greater than we might have expected. On turning to the excellent map prepared by M. Stolzmann which accompanies the third volume, and in which the principal localities where collections have been made are indicated, it will be at once manifest how large a part of Peru still remains ornithologically unexplored. There can be no doubt therefore that in the remote Andean valleys rich harvests still remain for future collectors. The following species appear to be described as new in the present volume:—*Picumnus punctifrons, Chrysoptilus punctipectus, Chamæpetes tschudii, Crypturus rubripes, Nothoprocta godmani,* and *Rallus peruvianus.*

XXVI.—*Letters, Announcements, &c.*

We have received the following letters addressed to the Editors of 'The Ibis:'—

Shoreham, Ootacamund,
January 27th, 1886.

Sirs,—I have just returned from a trip to Southern Travancore, and I hope very shortly to send you a paper on the birds which I collected there, as well as on a collection made, in September 1884, on the Anamullai Hills.

When in Trivandrum (the capital of Travancore), I was asked to go through the collection of birds in the museum there, and in doing so I came across two specimens of a Laughing-Thrush and two specimens of a Blackbird. The former were labelled *Trochalopterum cachinnans*, Jerd., the latter *Merula simillima*, Jerd., but I saw at once that they were not of these species, and were to me unknown. I pointed out this to Mr. Harold Ferguson, who was with me, and asked him where the specimens were obtained. The specimens had been purchased, together with a number of other Southern Indian birds, from a native somewhere on the west coast by Mr. Atholl Macgregor, when he was Resident of Travancore; and this is all that can be definitely ascertained about them; but Mr. Ferguson has promised to write to Mr. Macgregor for more definite information.

As both species are more nearly allied to Nilgiri forms, it is not improbable that they were obtained on the higher ranges of the Palghat Hills, a portion of the country I have not yet worked, but which I hope to visit later in the year.

The following are descriptions of both species; I may premise by mentioning that the two specimens of each species are identical one with the other. Both the Blackbirds are, unfortunately, females; the Laughing-Thrushes are not sexed:—

TROCHALOPTERUM CINNAMOMEUM, sp. nov.

Similar to *T. cachinnans*, Jerd., but entirely wanting the black markings of head, face, and chin; no ash-colour on the posterior portion of the supercilia. Lower parts deep cinnamon-brown; chin darker.

A broad superciliary stripe from base of nostril to nape, white as far as posterior angle of eye, and from thence gradually shading to ochreous buff; lores rusty brown; cheeks and ear-coverts ochreous buff. Chin, fore part of throat, and feathers at base of lower mandible very dark red-brown. Lower parts cinnamon-brown, olivaceous on flanks and lower tail-coverts; lower wing-coverts and axillaries pale cinnamon-brown, this colour tinging also the inner edges of the primaries; rest of under surface of primaries hair-brown. Top of head dark hair-brown, slightly tinged with ashy on the nape; rest of upper parts, including tail, olive-brown, with a hardly perceptible greenish tinge;

quills hair-brown, with their outer edges olive-brown. Length 8 inches, wing 3·5, tail 3·7, tarsus 1·3, culmen 0·8.

MERULA ERYTHROTIS, sp. nov.

Similar to *M. simillima*, Jerd., but with the feathers at base of upper and lower mandibles, lores, cheeks, and ear-coverts russet-brown; small triangular patch behind the eye naked and coloured yellow.

The two specimens are both apparently females, agreeing exactly in colour, except for the differences noticed above, with adult females of *M. simillima*, with which I have compared them.

One specimen is slightly immature, a few of the wing-coverts showing small triangular buffy patches at their tips; in this specimen the feathers in the angle of the gonys and a few feathers on the lower throat are tinged with russet-brown.

The skins measure:—Length 9·4, 9·6 inches; wing 4·8, 4·9; tail 4·2; tarsus 1·2; culmen 0·9.

The naked patch behind the eye, which is very distinct in both specimens, renders this species conspicuously different from all the other Blackbirds of Southern India.

I have to thank Mr. Harold Ferguson for allowing me to bring the specimens away with me to describe.

I am,
Yours &c.
WM. DAVISON.

University Museum of Zoology
and Comparative Anatomy,
Cambridge, February 1886.

SIRS,—Being engaged on the continuation of Bronn's 'Klassen und Ordnungen des Thier-reichs, Bd. vi. Abth. iv. Vögel,' which is to contain a general exhaustive account of the anatomy of birds, and a systematic arrangement to be based upon a summary of their structure, I feel the want of various important forms, some of which hitherto it has not been my good fortune to examine. I hope, therefore, that gentlemen interested in the progress of this work will be able to supply me with specimens of the birds mentioned in the following list:—

Atrichia.
Meliphaginæ, especially Moho.
Climacteris.
Trochilidæ.
Chasmorhynchus.
Bucco.
Trogon.
Batrachostomus
Centropus.
Geococcyx.
Otidiphaps.
Didunculus.
Syrrhaptes.
Pterocles.
Chionis.
Glareola.
Opisthocomus.
Eurypyga.
Heliornis.
Psophia.
Cariama.
Dicholophus.
Tinamus.
Turnix.

It is important that the specimens should be well preserved, which is only possible if they are submerged, in a fresh condition, in good spirit (no matter if the spirit be distilled from figs, alfarroba, potatoes, or grapes), the stronger of course the better.

It is advisable to open the bird's belly by a small slit without injuring the intestines, and to pour some spirit into its throat and gullet. After the birds have remained for a time in one vessel, it will be of great advantage to change the spirit and then firmly to close the jar or bottle by securing the stopper with grease, or bees'-wax (not sealing-wax or any other resin), and by tying a piece of bladder over it.

The preparations made of the specimens sent to the above address will be added to the Collection of the University.

Most important for the purpose stated above are nestlings; I should therefore feel greatly obliged for well-preserved nestlings of almost any birds, with the exception of the more common European sorts. Especially welcome would be the very young or embryos of *Casuarius, Dromæus, Apteryx* and *Rhea*, Penguins, *Phœnicopterus, Procellariinæ, Buceros, Stringops.*

Yours &c.,
H. Gadow.

Sirs,—In 'The Ibis' for January last, p. 89, you express your regret that the "grave error" of charging the Golden Oriole with eating fruits, especially cherries, should have been sanctioned and propagated by one of the new groups of Birds in the British Museum. I should be the very last to cast any aspersion on the character of this old favourite of mine; but I must express it, not as my opinion, but as the result of direct observation, that, in South Germany, Orioles feed freely on ripe sweet cherries. So far as I know, the only way of catching them is by snares baited with cherries, and those which I had alive were so caught. The group to which you take objection was made up from my distinct recollection of the home of a pair of cherry-eating Orioles.

Nevertheless, I should have considered it a grave error to doubt the correctness of observations made in other parts of the country, and was quite prepared to be taught that the Golden Oriole is only locally a cherry-eater. However, on referring to the original statement by your authority, M. Cretté de Palluel, I find that he certainly does not contradict the fact which I intended to represent in that group, but rather that he attempts to prove too much. After having stated that he had captured a great number of Orioles to examine the contents of their stomachs (the greater the pity!), and that he had found them gorged with *noxious* insects, with only a small quantity of fruit in some, he winds up with the following words, which were omitted by you:—"The Oriole does not digest the seeds of the fruits which it eats; it is therefore the natural propagator of fruit-trees, and not their enemy." As a matter of fact, it is just as well to state that the Golden Oriole does not swallow the stones of the cherries which it eats.

Having before me M. Oustalet's Report, I was also tempted by your notice of it to read his account of using electricity in the capture of birds, as it seemed to me an extraordinary statement in a report addressed to a Minister of Public Instruction and Fine Arts, who might be supposed to be acquainted with the elements of physical science. I do not think that the procedure, *as described by M. Oustalet,* would prove to be a successful investment or call for ministerial interference; but *in your version* you have so much improved upon the invention, that the experiment may be safely predicted to end in total failure; and the electric shock on the birds, which are expected to "fall like ripe fruit" from the "dead tree encircled with a band of copper," would be much less severe in its effects than that which you administered by your account upon the diaphragm of your readers.

Natural History Museum, A. GÜNTHER.
Feb. 25, 1886.

[The writer of the notice in question does not appear to have made his meaning clear to Dr. Günther. No doubt Golden Orioles do feed, to an extent varying with circumstances, upon ripe cherries, but the idea considered undesirable for propagation was that cherries constituted the *ordinary food* of this species *during the period of incubation.* The only English county in which Golden Orioles have been proved to have nested is Kent, renowned for its cherry-orchards. Suppose that another pair escape the usual fate of a conspicuous species until the cradle-shaped nest is formed: the unsophisticated proprietor of the orchard is pleased to watch the birds whose habits, food, &c. are unknown to him, and he proudly exhibits them to his friends. "Ah!" says one who has studied in the British Museum of Natural History, "those birds won't leave you a cherry on your trees—why, they just *live* on cherries; I've seen them stuffed at the Museum, with the hen bird sitting comfortable on her nest, while the old cock has just brought her two cherries in his bill." The subsequent action of that Kentish farmer will depend upon his credulity, but it may be imagined! Take a parallel case. There is the greatest difficulty in persuading a gamekeeper to spare a Kestrel, although its value to the farmer is undoubted, mice forming the principal part of its food. It is, however, certain that the Kestrel, when pressed by a clamorous brood, will pick up young Pheasants; but it would be quite wrong to suppose that game-birds of any kind constitute its ordinary food, whatever ignorant game-preservers may say. Would it not, help to intensify the hatred with which such people regard every "hawk," and would it not "sanction and propagate a grave error," if a group of Kestrels were to be publicly exhibited in our Museum, showing the old birds feeding their nestlings with young Pheasants? It would be as misleading to say that English children (especially those of Norfolk) *feed* on blackberries, and to quote the ballad of "The Babes in the Wood" in proof thereof.—H. S.]

Milton, Co. Halton,
Ontario, Canada,
February 5th, 1886.

SIRS,—The weather here is now severe, 18° below zero this morning, with about a foot of snow over the country, but not a Redpole has come as yet.

I am looking out for the long-expected *Linota hornemanni*. It seems now to be rather a rare straggler here. But even the common *L. linaria* has not put in an appearance this year. Some years they are plentiful, and during others not one is to be seen. It is very strange. A few "Meadow-Larks" (*Sturnella*) have been trying to pass the winter here (the snow did not lie till late in January), but at last they have disappeared, either frozen to death or gone south. It was rather curious to see these summer-birds feeding on horse-dung on the sleigh-tracks. One kept about our stables for a time, generally feeding on the pile of horse-dung outside the door; there it was joined by another, but they have gone at last. Not in a condition to fly far, they must have died. A few Snow-Buntings now and then, generally feeding on the sleigh-tracks, are the only birds to be seen now, except in the woods, where there are a few Woodpeckers and Titmice and Nuthatches. Canada in winter is a most dreary country so far as ornithology is concerned.

There is no doubt whatever, I think, of the excellency of

Linota exilipes as a species, although Mr. Seebohm is unable to comprehend it. How, after seeing them both in life, he could confound them, and write such a careless note on them as he has done in 'Siberia in Europe,' footnote, p. 51, I cannot imagine.

Yours &c.,
W. E. Brooks.

Science in Indiana.—The Indiana Academy of Science was organized on Dec. 29th, 1885, with the following officers:—D. S. Jordan, M.D., *President*; J. M. Coulter, Ph.D., J. P. D. John, D.D., Rev. D. R. Moore, *Vice-Presidents*; Amos W. Butler, *Secretary*; Prof. O. P. Jenkins, *Treasurer*; J. N. Hurty, *Librarian.* Amos W. Butler was appointed Curator of the department of Ornithology. Mr. Butler read a paper on "The past and present of Indiana Ornithology."

The Abundance of Quails last year.—Lord Walsingham has sent us the following further communication from the Earl of Ducie (see *suprà*, p. 101), dated Mentone, January 12th, 1886:—

"I have procured some definite information respecting the Quails, which tends to explain their appearance in unusual numbers last year. Why they should have been numerous only in Central England I cannot understand.

"A certain Signor Chiappori, of Genoa and Ventimiglia, who shoots along this coast at the time of migration, reports that Quails did not arrive in 1885 until the 11th May. The legal season for shooting them is very brief, lasting only to May 10, a period which generally covers the time of their stay on this coast. They usually arrive April 27. *None* were therefore killed in this district last spring. He reports further that none bred in Piedmont, where he usually finds plenty in autumn. A few bred along the sea-coast of the Riviera, an exceptional circumstance. He, and others, remarked that the Quails last season were smaller than usual, and that many were of a very dark colour."

The Generic Term Simorhynchus.—Dr. Stejneger, in his article above referred to (*suprà,* p. 201), as Dr. Coues before him, is much exercised at not being able to find where Merrem, in 1819, established the genus "*Simorhynchus,*" and begs the assistance of his brother ornithologists in solving this problem. If Dr. Stejneger will turn to Ersch and Gruber's 'Allgemeine Encyclopädie der Wissenschaften und Künste,' vol. ii. p. 405 (1819), under the article "Alca," he will find the mysterious genus described as follows:—

"(3) Starike. *Simorhynchus.* Die Stariken, denen wir im Teutschen ihren russischen Namen liessen, gesellte Pallas, durch den allein wir die erste genauere Kenntniss derselben haben, den Alken bei, obgleich er bei einer Art selbst die Unähnlichkeit anerkannte, und sie sich auch von den beiden vorhergehenden Gattungen auffallend unterscheiden. Ihr Schnabel steigt nämlich vorn aufwärts, so dass seine Spitze höher liegt; wie der Mundwinkel, er ist jederzeit glatt und ohne Wachshaut. Ihre Mundöfnung ist klein. Ihre Nasenlöcher liegen von der Stirn entfernt, von einer Erhöhung der Haut eingefasst, welche gewissermassen Nasenlöcherflügel bildet. Ihre Flügel bestehen aus 10 Schwungfedern der ersten und 16 der zweiten Ordnung. Die zweite ist die längste. Ihre Füsse sind wie bei den vorigen, und ihr kurzer Schwanz besteht aus 14 Ruderfedern. Man findet sie allein im Meere zwischen Asien und Amerika, und sie legen ein einziges Ei auf die kahlen Felsen."

As species of his genus *Simorhynchus,* Merrem enumerates subsequently (p. 406) *S. cristatus* (=*Alca cristatella*) and (p. 407) *S. psittacula* (=*Alca psittacula*). I presume, therefore, that the former species, as suggested by Dr. Stejneger, may be regarded as the type of *Simorhynchus* of Merrem, leaving *Alca psittacula* to *Cyclorhynchus* of Kaup, for those who are inclined to separate that species generically.—P. L. S.

The Wings of Birds.—Professor Flower, F.R.S., Director of the British Museum of Natural History, gave a lecture on Friday, 19th February, at the Royal Institution, on the Wings of Birds. He said that the power of flying through the air was one of the chief characteristics of the class of birds. Although some members of the other great divisions of the Vertebrata possessed the power in a greater or less degree, they were exceptional forms, whereas in birds the faculty of flight was the rule, its absence the exception. He then pointed out the peculiar modifications of the fore limb of the bird which fitted it for his use as a flying-organ. In the vast majority of existing birds the wing was constructed upon the same essential type down to all the details of the number, arrangement, and structure of the feathers, and of their position in relation to the different bones constituting the skeleton of the wing, which were fully described and illustrated by diagrams. Minor modifications of this type resulted in organs so different in appearance and use as the powerful wings of the Albatross and Swift, which enable their possessors almost to live in the air, and those of the Great Auk and Dodo, too small and feeble to raise the body from the surface of the ground. A totally different type, so far as the arrangement and structure of the feathers are concerned, is seen in the fin-like wings of the Penguins—birds which, on this as well as on other grounds, ought to occupy a far more distinct position in the class than has hitherto been accorded to them. A third type of wing is that of the birds of the Ostrich group, in which the feathers are so imperfectly developed as to make them useless as organs of flight. The question which naturally presents itself with regard to these birds is whether they represent a stage through which all have passed before acquiring perfect wings, or whether they are descendants of birds which had once such wings, but which have become degraded by want of use. In the absence of palæontological evidence it is difficult to decide this point. The complete structure of the bony framework of the Ostrich's wing, with its two distinct claws, rather points to its direct descent from the reptilian hand, without ever having passed through the stage of a flying-organ. The function of locomotion being entirely performed by the powerfully developed hind legs, and the beak mounted on the long and flexible neck being sufficient for the offices commonly performed by hands, the fore limbs appear to have degenerated in some members of the group, as the Cassowary and Apteryx, to mere rudiments, and to have entirely disappeared in the extinct Dinornis of New Zealand, just as the hind limbs of the whales disappeared when their locomotory functions were transferred to the tail. This view is strengthened by the great light that has been thrown on the origin of the wings of flying-birds by the fortunate discovery of the Archæopteryx in the Solenhofen beds of Jurassic age, as in this most remarkable animal, half lizard and half bird, the process of modification from hand to perfect flying-wing is clearly demonstrated. The lecturer mentioned, in conclusion, that specimens showing the structure of the principal forms of the wings of birds were being prepared for exhibition in the Natural History Museum, Cromwell Road.

The British Association Migration Committee.—We have from time to time drawn attention to the inadequate support given to the Committee for reporting on the Migration of Birds, and we have contrasted the sum which it receives from a semi-private source (£30) with the £1000 accorded, merely as a commencement, by the United States Government for a similar purpose. We now publish the following appeal :—

Great Cotes, Ulceby, Lincolnshire,
February 1st, 1886.

Migration of Birds.

Dear Sir,—You are doubtless aware that in 1880 a Committee was appointed by the British Association for the purpose of collecting observations on the Migration of Birds at Lighthouses and Lightships, and that this Committee has since been annually reappointed by the same Association, which in 1882 granted £15, in 1883 and 1884 £20, and in

1885 £30 in aid of the expenses incidental to the enquiry. Six reports have already been issued by the Committee, and a seventh is now in course of preparation.

About 200 stations on the coasts of Great Britain and Ireland, and the outlying islands, as well as several foreign stations, are annually supplied with letters of instruction and printed schedules for registering the occurrence of birds.

The work of distributing these circulars, the constant correspondence with the observers, the tabulation and recording of each separate entry and subsequent writing of the report entail a great amount of labour, and from the increasing interest taken in the enquiry, as indicated by the number of well-filled schedules sent in, there is every prospect of the work being much heavier in the future.

It is highly desirable that the observers should be supplied with some means of forwarding the wings and feet of any birds killed against the lanterns of the lighthouses and lightships, as well as small specimens entire. Unless this is systematically done, no really accurate results of the species on migration can be arrived at.

Unfortunately, the funds at the disposal of the Committee are totally inadequate to meet the annually increasing and heavy demands made upon it, and in the last year the expenditure amounted to £74 13*s*. 10*d*., the receipts (including the Grant made by the British Association) to £36 10*s*. 0*d*., leaving a balance of £38 3*s*. 10*d*. to be made good by the members of the Committee.

On these grounds, therefore, Donations or Annual Subscriptions are earnestly invited from those taking an interest in the subject. Should you be inclined to contribute to the funds of the Committee, I shall be glad if you will fill up and return to me the enclosed form, or otherwise intimate your intention to me at your earliest convenience.

I am, dear Sir,
Faithfully yours,
JOHN CORDEAUX,
Secretary to the Committee.

Habits of the Rufous-backed Humming-bird (Selasphorus rufus).—In the last Part of 'The Auk' (pp. 76–77), Mr. H. W. Henshaw gives the following interesting account of this beautiful species, as observed by him in mountains about forty miles east of Santa Fé, New Mexico:—

"The number of representatives of this and the preceding species that make their summer homes in these mountains is simply beyond calculation. No one whose experience is limited to the Eastern United States can form any adequate idea of their abundance. They occur from an altitude of about 7500 feet far up on the mountain sides, as high up, in fact, as suitable flowers afford them the means of subsistence. They are most numerous at an altitude of from 8000 to 9000 feet. During the entire summer they frequent almost exclusively a species of *Scrophularia* which grows in clumps in the sunnier spots of the valleys. From early dawn till dusk the Humming-birds throng around these plants intent on surfeiting themselves with honey and the minute insects that the honey attracts. The scene presented in one of these flowering areas is a most attractive one. Males and females all flock to the common feeding-ground, and as the Hummers, especially the Rufous-backed species, are pugnacious and hot-tempered in the extreme, the field becomes a constant battle-ground whereon favourite flowers and favourite perching-grounds are contested for with all the ardour that attaches to more important conquests. The fiery red throat of the Rufous-backed Hummer is an index of its impetuous, aggressive disposition; and when brought into conflict with the other species it invariably asserts its supremacy and drives its rival in utter route from the fields. Nor do the males of this species confine their warfare to their own sex. Gallantry has no place, apparently, in their breasts, and when conquest has put them in possession of a perch near a clump of flowers they wage war on all fresh comers, females as well as males.

"Some idea of the number of Humming-birds in this locality —and in this respect this whole mountain area is alike—may be gained from the statement that in a single clump of the *Scrophularia* I have counted eighteen Hummers, all within reach of an ordinary fishing-rod. There was scarcely a moment in the day when upwards of fifty could not be counted within the area of a few yards in any of the patches of this common plant."

New Birds from Celebes.—In an account of a meeting of the Verein für Naturwissenschaft of Brunswick, held on the 18th February last, published in the 'Braunschweigische Anzeiger' for March 3rd, which Dr. W. Blasius has kindly forwarded, will be found short characters of the two new birds from Celebes, named *Dicæum nehrkorni* and *Rallus plateni*. The specimens thus described formed part of a large collection made by Dr. Platen at Rurukan, in Northern Celebes, in 1884 and 1885, of which, no doubt, a fuller account will ultimately be given.

New and Recent Expeditions.—Mr. G. C. Bourne has returned safely from his visit to Diego Garcia, and amongst his spoils has brought back a collection of birds, comprising representatives of about 15 species. These are all Waders and Sea-birds with the exception of a single Weaver-bird, apparently *Foudia madagascariensis,* which has been no doubt imported from Mauritius. Mr. Bourne will read a report on his birds at one of the approaching meetings of the Zoological Society of London.

Mr. Henry J. Elwes has received the appointment of Naturalist to the Embassy which is about to proceed to Lhassa with the object of opening Tibet to the trade of India. There can be no doubt that in this instance at least we have the right man in the right place. Mr. Elwes's well-known energy and intimate acquaintance with the fauna of Darjeeling alike render him in every way fitted for this arduous post, and all the fraternity of the B.O.U. will, we are sure, join us in wishing him success in his somewhat hazardous journey. Mr. Elwes will leave England very shortly for Darjeeling, whence the Expedition will start in the early part of the summer.

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XXVII.—*Further Notes on* Phylloscopus borealis *in Norway.*

By Robert Collett, F.M.B.O.U.

In the 'Proceedings' of the Zoological Society of London for 1877, p. 43, I published some observations on *Phylloscopus borealis* and its occurrence in Norway. I had found this species during the summer of 1876 established in several places in Finmark, as in the inner valleys of Porsanger and in the valley of the Pasvig river in South Varanger. Since then I have visited Finmark on several occasions during the summer, and have frequently had opportunities of observing *P. borealis* in the previously known spots, as well as in fresh localities. I therefore wish to make some further observations concerning this interesting species as a supplement to my former paper.

Phylloscopus borealis is to be found breeding in Finmark (Norwegian Lapland) in many of the luxuriant birch-woods both in West and East Finmark. To the west of the North Cape I have not met with it up to the present, nor especially in the rich valleys in Alten, which, however, I have had but little opportunity of visiting; but I believe it not unlikely that it will be found inhabiting this district also, and thus prove that it has extended its range to the western seas. Its northern boundary in our land may be said to be 70° 20′, while, in Siberia, Mr. Seebohm did not meet with it north of 69°.

It was especially in the months of June and July 1885 that I had good opportunities of observing this species during its summer residence in our latitudes. That year I visited the wide Tana valley *; and here I found *P. borealis* everywhere about the lower course of the river (Matsjok, Seida, Oldernæs, Polmak), where the birch-woods were tolerably luxuriant, and where the ground was not too dry, but well overgrown with plants and grasses. In South Varanger, where I have met it on several previous occasions (in Langfjord and on the Pasvig river), I found it last summer again in the old localities at Elvenæs and Salmi-Javre, and met with it also in Jarfjord.

At several of these places, especially at Polmak, in Tana, and at Salmi-Javre on the Pasvig, these birds were comparatively numerous, and during a few hours' walk I have met with a dozen singing males.

As the luxuriant birch-woods are only to be found in the larger valleys, these are the chief places of resort of this species; but they do not live on the plateaus or open places, even when these are partially wooded, as the woods there are generally more or less thin and the trees stunted. They frequent both the birch trees and willow-thickets, and often sit singing from the top of the tall fir trees which are to be found singly or in small numbers in the birch-woods. In its habits *P. borealis* resembles the other *Phylloscopi*, but is wilder, flies with greater strength, and appears reluctant to show itself so openly between the leaves as, for instance, *P. trochilus*. They are often seen fluttering about the end of the branches like the last-mentioned species in order to look for insects.

Concerning the breeding of *P. borealis* but little, so far as I know, has yet been published.

Near Lake Baikal, in 1866–71, Dybowski found it breeding in woods of *Pinus cembra* and *Pinus pichta*; and he describes the nest in the following terms (Journ. f. Ornith. 1872, p. 359):—"Er macht es in der Form einer Hütte, indem er dem vorhandenen Grase oder Moose die Gestalt eines Gewölbes giebt. Das letzte hebt er von der Erde etwas in die Höhe und glättet es aus, und erst unter diesem natürlichen Gewölbe macht er ein Lager von lauter trockenen Zirbelbaumnadeln (*P. cembra*). Auf diese Weise hat er eigentlich kein Nest, es ist nur ein natürliches Gewölbe und ein Lager." It will be seen that none of the nests described below exhibited a trace of the peculiarity of construction described by Dybowski.

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* Lately described by Mr. Alfred Chapman in 'The Ibis' for 1885, p. 158, in his "Birds'-nesting Ramble in Lapland."

On July 6, 1877, at Egaska, on the Yenesei, a little north of the Arctic Circle (67°), Mr. Seebohm found a nest with five fresh eggs (which were rather larger than those of *P. trochilus*) of a white colour, with very pale red spots. The nest was built on the ground in a rather open wood, on the side of a tussock, between grass and other plants, and was semidomed and composed only of dry straws, without feathers or moss ('Ibis,' 1879, p. 9).

As my sojourn in Finmark in 1885 was just in the districts where this species is found more or less frequently, I did my best to trace out its breeding-habits in our country; and my efforts were at least partially successful.

At Matsjok, the last large tributary of the Tana river before its outlet to the sea, I met with the first specimen on June 22nd, and they were then evidently just arrived, as the season was unusually little advanced. The next day it was heard to sing for the first time. In a female shot on the 26th (at Polmak) the eggs in the ovary were but little developed, scarcely so large as hemp seeds; and when on June 30th I left the valley for some time, the breeding-season had not commenced, although it was evident that the birds had paired and had probably commenced to build.

When, on July 11th, in company with my friend Mr. Landmark, a zealous oologist, I arrived at the Pasvig river in South Varanger, *P. borealis* appeared to be just in the middle of its breeding-season; but during the few days we spent in that locality we did not succeed, although we spared no pains, in finding any nests. At least six males were singing continually throughout the whole day close to our station, Börnsund, at Salmi-Javre; but the females hardly ever permitted themselves to be seen, while the enormous swarms of mosquitos rendered any close observations almost impossible. We searched for two days unceasingly amongst the singing males. We found a number of other nests in the immediate neighbourhood, but obtained no evidence that nests of *P. borealis* lay near the spot where the males were singing.

On June 25th I was again at Matsjok; and now, in the course of two days, I found three nests of this species, each containing half-grown young ones. At that time it was easy enough to find the nests, as we were attracted to the birds by their very peculiar call-note. The males had by this time almost ceased to sing, and it was now altogether difficult to discover the birds. A good way of finding them was to place one's self close to a nest of *Fringilla montifringilla,* and cause its owners to utter their loud calls of anxiety. This never failed to bring a number of the small birds of the district to the spot. One single sharp note of *P. borealis* and a glimpse of it between the leaves would be sufficient to show that its quarters were not far off. Then I had to search for the place; and on getting near the nest, the parents exhibited great signs of anxiety, although they were sometimes cautious enough, and I was once obliged to wait patiently for two hours exposed to the attacks of the blood-thirsty mosquitos before the female would fly to her nest amongst the tall forest plants.

The first nest I found (on July 27th) was placed at the foot of a slope thickly covered with birch trees, and was well hidden by *Cornus suecica,* halfgrown *Chamænerion angustifolium, Veronica longifolia,* and *Melica nutans.* It lay under the root of a tree, which partly formed a roof to the nest. The other nest, found the same day at another slope in the wood, had no such protection; but both nests were completely domed, as is usual in those of the other *Phylloscopi.* They were most loosely constructed; the outer base was composed of some dry birch-leaves; the outside consisted of coarse straws and moss, the interior of finer straws, but without a trace of hairs or feathers. The number of young birds in the first was seven, in the other six. Each brood was about nine days old.

The third nest (July 28th) also lay on a high slope covered with birch trees, protected by a thin branch of juniper and surrounded mostly by *Cornus suecica,* while the other tall forest plants here were absent. This nest was thus somewhat exposed. Like the others, it was domed and loosely put together, inside with fine straws, outside of larger, but nevertheless soft, straws, as well as a good deal of two kinds of moss which covered the ground in the immediate neighbourhood, viz. *Hylocomium splendens,* Hedw., and *Dicranum scoparium,* Hedw. The number of young was six, nearly ready to fly*.

In these three nests the first eggs must have been laid about July 11th, 10th, and 9th; the number of eggs were seven, six, and six respectively. The distance between the first and second nest was about three kilometres, between the second and third about one kilometre.

Whilst the females are sitting, the males have each their singing-place, which they hardly ever leave. It was on a little hill within the woods covered with larger birch and a few pine trees which towered above the others. Here the male would sit, in the top of the loftiest trees, and sing almost incessantly the whole day; it stopped only for a few moments, when it generally entirely disappeared, and sometimes it could then be seen to meet the female. Some minutes after it would perch again on the top of its tree, as a rule on the same branch, and recommence its song again.

The singing-place is undoubtedly at some distance from the nest; as previously stated, my friend and myself could never discover a trace of the nest there, although the ground around was most carefully searched. The singing male did not take the least notice of our presence, and never by a movement or change of note did it exhibit the slightest anxiety.

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* This brood is now mounted in the University Museum, Christiania.

The indefatigable manner in which the male gives forth its monotonous, but nevertheless strongly sounding, song is almost incredible. The song consists, as I have previously remarked, of a single note, *zi-zi-zi-zi* . . . . . ., repeated unusually quickly, fourteen to sixteen times in succession. After each song follows a short period of rest, which in the height of the singing-time scarcely exceeds half a minute, when it recommences its song again. The song of the different specimens was almost precisely alike, but in some it might sound a little more or less harsh than in others. Seebohm has compared the song to the trill of the Redpole; and this seems to be a suitable description, although it appeared to me to resemble more the first quick notes of the song of *Sylvia curruca*.

In these latitudes, where the day is but little lighter than the night, the song might be heard at any hour and even at midnight. A little after the middle of July most of the males had ceased to sing, although at Matsjok once or twice I heard the song so late as the 28th of that month.

This species never occurs in great numbers; but as each male in a district does not conceal itself from notice, the males are consequently more easily secured than the females, which, as a rule, are somewhat difficult to obtain. After the singing-time is past, the males are also but seldom seen; their characteristic and sharp call-note is then the only thing to direct one's attention to them. This call-note can best be described by a short and whistling "tseers," and may be heard at a long distance. It does not closely resemble the cry of any other northern bird, but is most like the note which *Cinclus aquaticus* utters during its flight. This note is always heard when one approaches its nest or its young.

The food of *P. borealis* consists chiefly of mosquitos, which at their breeding-time swarm in myriads in the birch-woods. On two occasions I have found the larvæ of a *Cidaria* or other Geometrid larva in its stomach, as well as other soft insects.

Amongst the numerous specimens I have shot in Finmark during the summer I can find scarcely any variation in the coloration of the plumage; in some males the green colour may be somewhat more strongly developed than in others shot at the same time.

As previously mentioned, these birds appear to arrive rather late in the spring. Mr. Seebohm, in 1877, met with the first arrivals on June 18th, and a few days afterwards found them in considerable numbers. In 1885, at Matsjok (Tana), they could hardly have arrived before June 22nd, but two or three days afterwards they were numerous. No information can be given concerning their departure. The last specimen shot by me was on July 28th (at the third nest), the day before I left the Tana; it had already commenced to moult, and had a considerable number of new feathers on its head and back.

In conclusion I will give the measurements of sixteen freshly killed specimens shot by me in Finmark in 1878 and 1885.

Males.

	Total length. mm.	Wings. mm.	Tail. mm.
a	140	70	49
b	137	70	51
c	135	73	53
d	135	73	52
e	135	70	49
f	135	69	50
g	133	70	48
h	132	69	43
i	132	67	45
j	131	70	53
k	130	68	49
l	129	67	48
m	127	70	50
n	127	69	50

Females.

	Total length. mm.	Wings. mm.	Tail. mm.
o	125	67	48
p	124	65	49

According to these measurements (together with those previously reported) the average length of this species will be, for males 132 millim., and for females 124 millim.

Christiania, January 31, 1886.

XXVIII.—*A Review of the Species of the Genus* Himantopus.

By Henry Seebohm.

The genus *Himantopus* contains ten species, and embraces the Stilts, the Avocets, and the Peruvian Stilt and the Banded Avocet, which form the connecting links between them.

This genus of birds is remarkably homogeneous and well differentiated from all allied genera, and contains species so closely related to each other, that there can be no possible reason for subdividing it in the way which has been adopted by most ornithologists.

The synonymy of the genus Himantopus is as follows:—

	Type.
Himantopus, Brisson, Orn. v. p. 34 (1760)	*H. melanopterus.*
Avocetta, Brisson, Orn. vi. p. 538 (1760)	*H. avocetta.*
Recurvirostra, Linnæus, Syst. Nat. i. p. 256 (1766)	*H. avocetta.*
Macrotarsus, Lacépède, Mém. de l'Inst. iii. p. 518 (1801)	*H. melanopterus.*
Hypsibates, Nitzsch, Ersch u. Grub. Encycl. xvi. p. 150 (1827)	*H. melanopterus.*
Leptorhynchus, Dubus, Mag. Zool. v. pl. 45 (1835)	*H. pectoralis.*
Cladorhynchus, Gray, List Gen. B. p. 69 (1840)	*H. pectoralis.*

It is difficult to say to which genera *Himantopus* is nearest related. The softness of the plumage resembles that of *Phalaropus,* but this is probably an evidence of analogy rather than of affinity. The delicate reticulation of the tarsus is similar to that of the bar-tailed species of *Charadrius,* to which, in spite of the dissimilarity of the bill, the genus may possibly be more nearly allied. The ten species included in *Himantopus* may be diagnosed from all the other species of the family Charadriidæ by the combination of three characters. Each of these is found in many other species of the family, but no species belonging to it combines all three, except the ten species which constitute the genus *Himantopus*. These three characters are a long bill and a long and reticulated tarsus. The genus may therefore be diagnosed as follows :—

Charadriidæ having the tarsus covered all over with a network of fine hexagonal reticulations, having more than three fourths of the bill (measured from the frontal feathers) beyond the nasal orifice, and having the tarsus at least twice the length of the middle toe.

The species may be diagnosed as follows :—

Innermost secondaries white	*avocetta*	
	rubricollis	White on scapulars.
Toes deeply webbed ..	*americanus*	Outer webs of secondaries chiefly dark.
	pectoralis.	
	andinus	
	mexicanus	
	brasiliensis	No white on wings.
In pied plumage; black on hind neck not reaching to the crown	*leucocephalus*	
Breeding - plumage entirely dark......	*novæ-zelandiæ*	In pied plumage; black on hind neck not extending under the eye.
	melanopterus	

The range of the genus is almost cosmopolitan, but it does not extend into the Arctic Region nor to the smaller islands of the Pacific. Four species breed in the Australian Region, two in the Nearctic and two in the Neotropical Regions. The remaining two species breed in the Palæarctic Region, but one breeds also in the Oriental Region, and the other in the Ethiopian Region. This information has little interest because it has little significance, except perhaps that Australia appears to have been the centre of distribution of the genus, an inference probably false. If the genus be split into three, bad is made worse, and the key to the geographical distribution is broken. I propose to approach the subject from quite a different point of view.

A careful study of the geographical distribution of the couple of hundred species and subspecies of birds which compose the family Charadriidæ leads to the conclusion that they are the variously modified descendants of a species of wader which lived on the shores of the north polar basin some time before the close of the Glacial epoch. During one of the later Glacial periods this circumpolar species was driven south, and split up into parties, which were isolated in various parts of the tropical and subtropical regions, and became, during the period of their isolation, differentiated into species. These species were the ancestors of the present genera of Charadriidæ, and during the interglacial period which followed their differentiation (probably the last of the half dozen or so which occurred) most of them followed the retreating cold and became (with few exceptions) once more circumpolar; but instead of being, as they formerly were, of one species, they then consisted of a dozen or more well-defined species, from one of which no doubt the genus *Himantopus* descended. During the last Glacial period the dozen or more species were again dispersed, each of them was split up into parties, which becoming isolated from each other were differentiated into the now existing species.

Let us endeavour to trace the history of the ancestral species from which the ten species now forming the genus *Himantopus* are descended, and let us try to follow its emigration, from the period when it consisted of only one species living on the shores of the north polar sea, down to the present time when its descendants have become ten species scattered over the greater part of the globe.

Probably the first split in the circle of circumpolar birds was the intervention of a glacier, stretching from the north pole down the mountains of Greenland. The semi-isolation caused by the stoppage of any interbreeding between the birds of the Atlantic coast of America and that of Europe must naturally have produced a differentiation between the birds of Grinnell Land and Scandinavia, and there is reason to believe that the former became Stilts and the latter Avocets; but inasmuch as interbreeding could take place between the birds of each bay and those of the next, along the whole line in one direction, it can scarcely be doubted that at first the Stilts were connected by a series of intermediate forms with the Avocets. The next cause of isolation (which was probably complete) was most likely a glacier stretching across the north pole from the Rocky Mountains, either to Novaya Zemlya or to the mountains of Eastern Siberia. This must soon have been followed by the evacuation of the Polar basin, and the emigration of the birds in four parties along the four shores leading to the south. The causes already explained must have produced an emigration of Stilts along one coast of the Atlantic, an emigration of Avocets along the other, whilst the emigration along the two coasts of the Pacific must have consisted on the one side of Avocets with a strong strain of Stilt in them, and on the other of Stilts with a strong strain of Avocet blood.

The next step to take is to examine the ten species of the genus, and ascertain if all four parties of emigrants have left descendants, and to determine by what characters they may now be detected. The four groups of which we are in search are Stilts, Semi-stilts, Avocets, and Semi-avocets. The three first species on the list, *H. avocetta, H. rubricollis,* and *H. americanus,* are unquestionably thorough-bred Avocets, diagnosed as *mantle white, scapulars and secondaries for the most part white.* The five last species on the list, *H. mexicanus, H. brasiliensis, H. leucocephalus, H. novæzelandiæ,* and *H. melanopterus,* are as unquestionably thorough-bred Stilts, having all the parts mentioned above black instead of white. These are the important characters which date farthest back, but it is worthy of note that in these two groups the black mantle, &c., is correlated with a straight bill, very slightly webbed feet, and the absence of a hind toe; whilst the white mantle is correlated with a recurved bill, strongly webbed feet, and the presence of a hind toe. We have now two species left, *H. andinus* and *H. pectoralis.* The former is called an Avocet, and the latter a Stilt, by the writers who place such an extravagant value on structural characters. In my opinion *H. andinus* is a model representative of a Semi-stilt. It has the black mantle and wings of the Stilts, whilst its strain of Avocet blood crops up in the less important characters of its recurved bill, webbed feet, and hind toe. *H. pectoralis,* on the other hand, is an excellent Semi-avocet, its white mantle and the white on its wings proclaiming it an Avocet, whilst its straight bill and the absence of a hind toe show its relationship to the Stilts.

The third step in the argument is the apportioning of the four groups to the four routes. The case is a very simple one. The Semi-stilt and the Semi-avocet are, by the terms of the hypothesis, the representatives of the two Pacific-coast emigrations; and as the Semi-stilt inhabits Peru, and the Semi-avocet Australia, there can be no dispute that the Semi-stilts emigrated along the American shores of the Pacific, and the Semi-avocets along the Asiatic shores of that ocean. The shores of the Pacific are so much more mountainous than those of the Atlantic, that the ice of the Glacial periods must have extended much further south on the former than it did on the shore of the Atlantic, a circumstance which may account for the fact that the Semi-stilt and the Semi-avocet both crossed the line and settled in the cooler parts of the southern hemisphere. The Avocets consequently represent the Old-World pair, the true Avocets migrating along the Atlantic coast. The Stilts being the New-World couple, we must apportion the Atlantic coast of America to the true Stilts.

Their further migrations must be considered when their mutual relationships have been discussed. The first group contains three species, which may be regarded as true Avocets.

HIMANTOPUS AVOCETTA.

Avocetta avocetta, Briss. Orn. vi. p. 538 (1760).

Recurvirostra avocetta, Linn. Syst. Nat. i. p. 256 (1766); et auctorum plurimorum.

Scolopax avocetta (Briss.), Scop. Ann. I. Hist. Nat. p. 92 (1769).

Avocetta europæa, Dumont, Dict. Sc. Nat. iii. p. 339 (1816).

Recurvirostra sinensis, Swinhoe, Ibis, 1867, p. 401.

Plates: Dresser, Birds of Europe, vii. pl. 534; Gould, Birds of Gt. Britain, iv. pl. 53.

Habits: Seebohm, British Birds, iii. p. 74.

Eggs: Seebohm, British Birds, pl. 24. figs. 2, 5.

The Common Avocet may be distinguished by the colour of its *forehead, crown, and hind neck,* which are *black in the adult* and *brown in young* in first plumage. Its white innermost secondaries when adult are also peculiar to the species.

The increase of population and the drainage of marshes have restricted the breeding-places of the Avocet in Europe to the islands off the coast of Denmark and Holland, the marshes of Southern Spain, the delta of the Rhone, and the lagoons on the shores of the Black Sea. To Southern Scandinavia and the rest of Central and Southern Europe, with the exception above mentioned, the Avocet has become, as it is in our islands, only an accidental visitor; but further east it is more abundant, breeding in Palestine and Persia, where it is a resident, and in North Turkestan, the extreme southwest of Siberia, South-east Mongolia, and South Dauria, where it is a summer visitor, wintering in China, Formosa, Hainan, India, and occasionally Ceylon. It has been recorded from the main island of Japan. In Asia Minor it is principally known on passage, though a few are said to remain during the winter; and it is said to breed throughout Africa in suitable localities.

HIMANTOPUS RUBRICOLLIS.

Recurvirostra novæ-hollandiæ, Vieillot, N. Dict. d'Hist. Nat. iii. p. 103 (1816).

Recurvirostra rubricollis, Temminck, Man. d'Orn. ii. p. 592 (1820); et auctorum plurimorum.

Avocetta novæ-hollandiæ, Ellman, Zoologist, 1861, p. 7470.

Plates: Gould, Birds of Australia, vi. pl. 27.

Habits: Buller, Birds of New Zealand, p. 201.

Eggs: Campbell, Nests and Eggs of Australian Birds, p. 55.

The Australian Avocet may be diagnosed at all ages by its combination of the following characters:—*secondaries white* on both webs, a great deal of *white on the scapulars*, but *none on the innermost secondaries.* In breeding-plumage the head and neck are chestnut.

It is found throughout Australia, except in the extreme north, and occasionally occurs in Tasmania, New Zealand, and Norfolk Island.

The Australian Avocet is an intermediate form between the Common Avocet and the North-American Avocet; it has less white on the wing than the former and more than the latter.

HIMANTOPUS AMERICANUS.

Recurvirostra americana, Gmelin, Syst. Nat. i. p. 693 (1788); et auctorum plurimorum.

Recurvirostra occidentalis, Vigors, Zool. Journ. iv. p. 356 (1829).

Plates: Wilson, Amer. Orn. pl. 63. fig. 2; Gray, Gen. Birds, iii. pl. 155.

Habits: Baird, Brewer, and Ridgway, Water-Birds N. Amer. i. p. 341.

Eggs: Thienemann, Vogeleiern, pl. lxvi. fig. 3.

The North-American Avocet may be distinguished at all ages by the colour of its *secondaries*, which are *white, with a large patch of brown on the outer web.* In breeding-plumage the head and neck are pale chestnut.

It breeds in North America, as far north as the Great Slave Lake, and as far south as Texas. To the northern portion of its range it is only a summer visitor, wintering in Central America and the West Indies.

These three species constitute the group of true Avocets. Their ancestors seem to have left the Polar basin by way of the European shores of the Atlantic, and to have occupied Africa and the southern portion of the Palæarctic Region.

Finding the Oriental Region already occupied during the breeding-season by the Stilts, they seem to have sent off a detachment to Australia during the Glacial period. Here also the ground appears to have been partially occupied by congeneric species, so that a second emigration became necessary, which found a home on the west coast of the United States.

HIMANTOPUS PECTORALIS.

Recurvirostra leucocephala, Vieillot, N. Dict. d'Hist. Nat. iii. p. 103 (1816).

Recurvirostra orientalis, Cuvier, Règ. An. i. p. 496 (1817).

Leptorhynchus pectoralis, Dubus, Mag. Zool. v. pl. 45 (1835); et auctorum plurimorum.

Himantopus palmatus, Gould, Syn. Birds Austr. ii. pl. 14 (1837).

Cladorhynchus pectoralis (Dubus), Gray, List Gen. Birds, p. 69 (1840).

Cladorhynchus orientalis (Cuv.), Selys-Longch. Bull. d'Ac. Roy. Belg. xviii. pt. i. p. 9 (1851).

Cladorhynchus leucocephalus (Vieill.), Harting, Ibis, 1874, p. 252.

Plates: Gould, Birds of Australia, vi. pl. 26.

Habits: Gould, Handb. B. Austr. ii. p. 248.

Eggs: Campbell, Nests and Eggs of Australian Birds, p. 55.

The Banded Stilt (or Banded Avocet, as it ought to be called) may be distinguished at all ages and seasons by its *white mantle* and *brown scapulars*, a combination found in no other species of the genus. A second and equally good diagnosis is *webbed feet*, but *no hind toe*. In breeding-plumage the lower breast is chestnut, shading into a brown ventral band.

It is a resident in the southern half of Australia, and has occurred in Tasmania.

The Banded Avocet is the sole representative of the Semi-avocets, which I have endeavoured to show probably emigrated from the Polar basin along the Pacific coast of Asia.

HIMANTOPUS ANDINUS.

Recurvirostra andina, Philippi & Landbeck, Wiegm. Arch. 1863, pt. i. p. 131.

Plate: Harting, Ibis, 1874, pl. ix.

Habits: Philippi and Landbeck, loc. cit.

Eggs: unknown.

The Peruvian Avocet (or Peruvian Stilt, as it should be called) is the only species of the genus having *webbed feet* and *a hind toe* which has *no white on the secondaries.*

It is only known from a plateau of the Peruvian Andes, 16,000 feet above the sea.

The Peruvian Stilt is the sole representative of the Semistilts, which, according to my hypothesis, emigrated from the Polar basin along the Pacific coast of America.

HIMANTOPUS MEXICANUS.

Himantopus nigricollis, Vieillot, N. Dict. d'Hist. Nat. x. p. 42 (1817).

Himantopus mexicanus, Ord, Wils. Orn. Amer. vii. p. 52 (1824); et auctorum plurimorum.

Hypsibates nigricollis (Vieill.), Cabanis, Schomb. Guian. iii. p. 758 (1848).

Macrotarsus nigricollis (Vieill.), Gundlach, Journ. Orn. 1856, p. 422.

Plates: Wilson, Am. Orn. pl. 58. fig. 2; Sclater & Salvin, Proc. Zool. Soc. 1873, p. 453 (woodcut of head).

Habits: Baird, Brewer, & Ridgway, Water-Birds N. Amer. i. p. 346.

Eggs: Thienemann, Vogeleiern, pl. lxiii. fig. 6.

The North-American Stilt is an intermediate form between the Common Stilt and the Chilian Stilt. It may be recognized by the distribution of the *black on the back of the neck,* which not only *passes underneath the eye* but also *extends over the crown* and joins the black on the mantle. Young in first plumage resemble adults, except that the black is replaced by brown.

It breeds in the southern half of North America, and winters in the northern half of South America, but in the central portion of its range it is said to be a resident.

Himantopus brasiliensis.

Himantopus brasiliensis, Brehm, Vög. Deutschl. p. 684 (1831).

Himantopus nigricollis, auctorum multorum, nec Vieillot.

Plates: Sclater & Salvin, Proc. Zool. Soc. 1873, p. 454 (woodcut of head); Baird, Brewer, and Ridgway, Water-Birds N. Amer. i. p. 345 (coloured plate of head).

Habits: } Gibson, Ibis, 1880, p. 162.
Eggs: }

The Chilian Stilt may be recognized by the distribution of the *black on the back of the neck*, which extends *underneath the eye*, but *not on the crown*, and is almost always separated from the black mantle by a white collar. Young in first plumage are supposed to differ only in being duller in colour.

It is said to breed in the Chilian subregion of South America, the more southerly birds migrating northwards in autumn to winter in South Brazil.

The Chilian Stilt appears to be most nearly related to the Australian Stilt, scarcely differing from it except in having a black band on the side of the head, and less white on the collar. It is, however, almost as nearly related to the North American Stilt, being, in fact, an intermediate form between the two.

Himantopus leucocephalus.

Himantopus leucocephalus, Gould, Proc. Zool. Soc. 1837, p. 26; et auctorum plurimorum.

Himantopus novæ-hollandiæ, Bonaparte, Compt. Rend. xliii. p. 421 (1856).

Himantopus albus, Ellman, Zoologist, 1861, p. 7470.

Plates: Gould, Birds of Australia, vi. pl. 24.

Habits: Gould, Handb. B. Austr. ii. p. 246.

Eggs: Buller, Birds of New Zealand, p. 204.

The Australian Stilt may be recognized when adult by the distribution of the *black on the back of the neck,* which *does not extend to any part of the head,* and is separated from the black mantle by a white collar. Young in first plumage are said to resemble the young of the Common Stilt.

The Australian Stilt breeds in Australia and New Zealand, and has occurred in Tasmania. It is probably only a winter visitor to the Malay Archipelago, where it has been recorded from New Guinea, Celebes, Borneo, Java, Sumatra, the Philippines, and some of the smaller islands.

It is most nearly related to the Black Stilt on the one hand, and on the other to the South-American Stilt.

HIMANTOPUS NOVÆ-ZELANDIÆ.

Himantopus novæ-zelandiæ, Gould, Proc. Zool. Soc. 1841, p. 8; et auctorum plurimorum.

Himantopus melas, Hombr. & Jacq. Ann. Sc. Nat. Paris, xvi. p. 320 (1841).

Himantopus niger, Ellman, Zoologist, 1861, p. 7470.

Himantopus spicatus, Potts, Trans. New Z. Inst. 1872, p. 198.

Plates : Gould, Birds of Australia, vi. pl. 25.

Habits : Buller, Birds of New Zealand, p. 205.

Eggs : Harting, Proc. Zool. Soc. 1874, pl. lx. fig. 10.

The Black Stilt in adult summer plumage is *black all over,* more or less glossed with green on the upper parts. In winter plumage it is difficult to distinguish from *H. leucocephalus,* but in the Black Stilt the sides as well as the back of the neck are black, and the white collar and central tail-feathers are marked with black. The latter character is still more marked in young in first plumage.

The Black Stilt is a resident in New Zealand, and is said to stray occasionally to Australia.

The similarity of the winter plumage to that of the Australian Stilt proves the close relationship of the two species. The Black Stilt doubtless emigrated either from Chili or from Australia to New Zealand, and acquired in the latter country a special nuptial dress, the result, in all probability, of sexual selection.

HIMANTOPUS MELANOPTERUS.

Himantopus himantopus, Briss. Orn. v. p. 34 (1760).

Charadrius himantopus, Linn. Syst. Nat. i. p. 255 (1766).

Himantopus candidus, Bonn. Tabl. Encycl. i. p. 24 (1790).

Himantopus vulgaris, Bechst. Orn. Taschenb. ii. p. 325 (1803).

Cursorius himantopus (Briss.), Turton, Brit. Faun. p. 62 (1807).

Himantopus rufipes, Bechst. Naturg. Deutschl. iii. p. 446 (1809).

Himantopus atropterus, Meyer, Taschenb. ii. p. 315 (1810).

Himantopus melanopterus, Meyer, Ann. Wetter. Gesellsch. iii. p. 177 (1814); et auctorum plurimorum.

Himantopus albicollis, Vieill. N. Dict. d'Hist. Nat. x. p. 41 (1817).

Hypsibates himantopus (Briss.), Nitzsch, Ersch u. Grub. Encycl. xvi. p. 150 (1827).

Himantopus plinii, Flem. Brit. An. p. 112 (1828).

Himantopus asiaticus, Less. Rev. Zool. 1839, p. 44.

Himantopus intermedius, Blyth, Cat. B. Mus. As. Soc. p. 265 (1849).

Himantopus autumnalis (Hasselquist), apud Gray, Holdsworth, Legge, Heuglin, Walden, Gurney, &c.

Plates: Dresser, Birds of Europe, vii. pls. 535, 536.

Habits: Seebohm, British Birds, iii. p. 79.

Eggs: Seebohm, British Birds, pl. 21. figs. 4, 6.

The Common Stilt, when in fully adult male plumage, may be recognized by its *pure white head and neck*. Less mature birds have *black on the back of the neck, extending over the crown*, but *not reaching the mantle*. Young in first plumage scarcely differ from those of the North-American Stilt.

The Common Stilt is most abundant during the breeding-season in India and Ceylon, where its numbers are increased during winter. Further east it is found during the cold season in Burma; and stragglers have occurred in Cochin China, Timor, the Philippine Islands, and North China. West of India it is a regular summer visitor to Afghanistan, Turkestan, North Persia, Palestine, Asia Minor, to the saltlakes of the Kalmuk and Kirghis steppes, the lagoons on the shores of the Black Sea, the delta of the Rhone, and the marismas of Southern Spain and Portugal. It is an accidental straggler on migration to the rest of Europe as far north as the Baltic. It is a resident in Northern Africa, where its numbers are largely increased during winter, and it has been found in various localities throughout that continent; but no reliable evidence of its breeding in South Africa has been obtained. It has been found both in the Canary Islands and Madagascar.

The five species last mentioned represent the true Stilts. They are so closely related to each other that the precise order of their emigration is not very easy to determine, but we may begin by assuming that they left the Polar basin along the Atlantic shores of America; thence they seem to have crossed the tropics to the Chilian subregion of South America, where the second species was isolated and differentiated. A second detachment appears to have crossed the Atlantic to the Canary Islands and Spain, whence they spread eastwards up the Mediterranean to the Oriental Region. Meanwhile the restricted area of the Chilian subregion seems to have compelled some of the white-crowned Stilts to emigrate a second time. They seem to have crossed the Pacific to New Zealand and Australia, where those inhabiting the former locality developed a special breeding-plumage.

The lessons to be learnt from a study of the genus *Himantopus* appear to be numerous and important.

1st. The Zoological Regions of Sclater and Wallace, however important they may be as regards Passerine birds, throw little or no light on the geographical distribution of the Stilts and Avocets.

2nd. The key to their distribution is to be found in the various coast-lines leading from the Polar basin.

3rd. The unnecessary splitting of genera makes it very difficult for the student to understand the geographical distribution of birds.

4th. The exaggerated importance too often attached to so-called structural characters makes it still more difficult for the student to perceive the true relationship of birds.

5th. The differentiation of species in consequence of isolation, and the production of subspecific forms in consequence of semi-isolation, prove the great importance of interbreeding in preventing the indefinite multiplication of species.

XXIX.—*On some new Paradise-birds.*

By O. Finsch and A. B. Meyer*.

(Plate VII.)

Amongst the collectors who at first founded and afterwards materially increased our knowledge of the zoology of South-eastern New Guinea, the principal credit is due to our fellow-countryman, Karl Hunstein, of Friedberg, in Hesse. A first-rate shot, collector, and observer, it was he who, after the failure of the gold-diggers' expedition (in the ranks of which he first visited New Guinea, seven years ago), in company with the well-known collector, Andrew Goldie, made several excursions into the same district of New Guinea and eastwards to Milne Bay and the d'Entrecasteaux Islands. In all these expeditions, which (although considerable collections of natural-history and ethnographical objects were made) had the main object of gold-prospecting, Hunstein, although his name has not hitherto been brought prominently forward, was the real collector †, and to him our thanks are due for the discovery of most of the new birds transmitted by Goldie to Australia and England.

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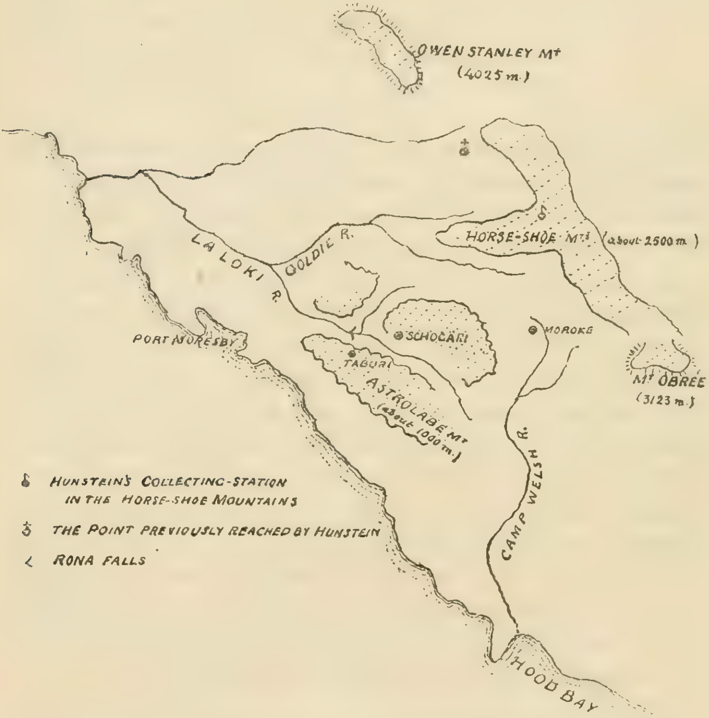
* [Translated, by permission of the authors, from their article in the 'Zeitschrift für die gesammte Ornithologie,' 1885, Heft iv., entitled "Vögel von Neu-Guinea, zumeist aus den Alpenregion am Südostabhange des Owen-Stanley Gebirges (Hufeisengebirge, 7000–8000 f. hoch), gesammelt von Karl Hunstein," part i.]

† See Sharpe, Ann. Nat. Hist. (5) vi. p. 231 (1880); id. Journ. Linn. Soc., Zool. xvi. p. 423 (1883); Ramsay, Proc. Linn. Soc. N. S. W. viii. p. 15 (1883) et x. p. 242 (1885). *Phonygama hunsteini*, Sharpe (op. cit. p. 442), and *Donacicola hunsteini*, Finsch (Ibis, 1886, p. 1, pl. i.), are both named after Hunstein.

Before 1880 Hunstein, along with Dan. O'Connor and other gold-diggers, had penetrated into the heart of the Owen-Stanley Mountains, as far as the south-western branch of the range, which was named by him "Horseshoe Mountain." On information furnished by the above-named explorers, Finsch, during his sojourn in South-eastern New Guinea in 1882, where he met with them in Port Moresby, prepared a rough map of this district, which has not yet been published and from which the map herewith given has been taken.


OWEN STANLEY M^T (4025 m.)
HORSE-SHOE M^TS (about 2500 m.)
LALOKI R.
GOLDIE R.
SCHOCARI
MOROKE
M^T OBREE (3123 m.)
PORT MORESBY
TABURI
ASTROLABE M^T (about 1000 m.)
CAMP WELSH R.
HOOD BAY
HUNSTEIN'S COLLECTING-STATION IN THE HORSE-SHOE MOUNTAINS
THE POINT PREVIOUSLY REACHED BY HUNSTEIN
RONA FALLS

District of Port Moresby.

Hunstein left Goldie and his companions in 1883, and in 1884 undertook on his own account an expedition to the Owen-Stanley Mountains with the intention of getting to a higher elevation than before, because he knew from his previous experience that by this means only he could expect to make new discoveries, especially among the Paradise-birds. He went first, accompanied by only one native attendant, to the Astrolabe Mountains, which he had already repeatedly visited, and the inhabitants of which he knew well, and met with a friendly reception.

The Astrolabe Mountains constitute a plateau, divided into two districts by a confluent of the Goldie river, the Laloki, which breaks out of them between two steep ridges of rock and forms below them the imposing "Rona Falls." These districts are called—that on the western side "Taburi," and that on the eastern "Schogari." It may be remarked that on the Astrolabe range, the height of which is given at 3824 feet on the English charts, the nights are cold, and the constant precipitation makes a residence very unpleasant for the collector.

After passing by the sources of the river "Camp Welsh," which flows into Hood Bay, Hunstein made his first halt at Moroke, the chief village of the district of the same name, and began his collecting there. Undeterred by the warnings of the natives, the bold explorer pushed forward thence into the Horseshoe Mountain, which lies between Mount Owen-Stanley and Mount Obree of the English charts, a region into which he, as in many other spots in New Guinea, was the first white man to place his foot. Here the vegetation was already sufficient to convince the practised eye that heights had been reached which had never before been attained by any collector in this district. There appeared a world of new trees and new plants. The discovery of a rhododendron with wonderful white flowers, which has been since described by our celebrated fellow-countryman, Baron v. Müller of Melbourne, leaves no doubt of the truth of this. Rhododendrons have also been found in the Arfak Mountains, in North-western New Guinea. But the keen collector was rewarded not only by finding rare plants, but also by the discovery of new species of birds. Amongst those were three beautiful and previously unknown Paradise-birds, to which two more were afterwards added.

It is quite evident that the stay in this mountain-region, where continuous precipitation renders the preparation of birds very laborious and that of plants almost impossible, was an excessively hard task, and one that could be only undertaken by a man of steel and iron, who was at the same time on the best terms with the natives, and a person of untiring industry and unbroken strength. Such a man was Karl Hunstein. Avoiding the scattered habitations of the natives, who were by no means friendly, Hunstein passed his time in the bush, and ascended almost daily the mountain-chain about 2000 feet higher, in order to obtain the beautiful Paradise-birds, of the existence of which he became assured by the feathered ornaments worn by the natives. Amongst these were, along with others, the tail-feathers of the male of the *Epimachus meyeri*, which Hunstein at once recognized as a new species, but of which, in spite of every effort, he only succeeded in obtaining a single female. This bird, as well as *Astrarchia stephaniæ* and *Paradisornis rudolphi*, were only to be met with in a hostile district, into which Hunstein could occasionally penetrate when unnoticed by the natives, and not without danger to his own life.

The greater part of the collections now to be described were obtained in this interesting and previously untrodden mountain-region, which, on account of the presence of the rhododendron, may be appropriately termed alpine. Very little was collected at Moroke, and nothing in the coast-district of Port Moresby, where the vegetation resembles that of Australia in its *Eucalypti*, or upon the way from Port Moresby to the Astrolabe range.

It is due to the fortunate incident that one of us, already well known to Hunstein, in whose company he had made a journey in 1882 into the interior from Port Moresby, met the latter in Cooktown, that this very interesting collection has found its way to Dresden, and thus to be published, although after much greater delay than was desirable*.

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* The typical specimens have been mostly placed in the Royal Zoological Museum at Dresden.

Besides this first portion treating of the Paradise-birds collected, a second paper will be given devoted to birds of other families. We also take this opportunity of mentioning a few species which Finsch obtained from the English collector, McCormac, during his visit to Milne Bay, and which are from the coast-district, no collector in this neighbourhood having yet penetrated into the interior.

A Paradise-bird obtained in exchange from the natives on the previously unvisited north-east coast of Kaiser-Wilhelmsland has also turned out to be a new species (*Paradisea finschi*). Lastly, we take this opportunity of mentioning some species belonging to the same district which were obtained by Meyer in his former journey on the coast of the Bay of Geelvink.

Among the nineteen species of Paradise-birds mentioned in this memoir, six appear to be new to science, and amongst these are two of new genera, *Astrarchia* and *Paradisornis*. Besides this, we have been able to describe the hitherto unknown females of two species, *Parotia lawesi* and *Lophorhina minor*, as also the hitherto unknown and splendid male of one species, *Amblyornis subalaris*. All these, except *Paradisea finschi*, of Kaiser-Wilhelmsland, come from Horseshoe Mountain.

Lastly, during the necessary comparisons, we have felt constrained to separate an already known species of Paradise-bird from the island of Jobie as *Diphyllodes jobiensis*, and a hitherto overlooked species from the south of the Bay of Geelvink as *Manucodia rubiensis*.

Berlin and Dresden, November 1885.

1. MANUCODIA CHALYBEATA.

Examples of this species from the coast of Milne Bay, opposite the Killerton Islands, agree very well with specimens from Andai, Passim, and Inwiorage, on the Bay of Geelvink (*Meyer*), except that in the former the neck-feathers seem to be more brilliantly coloured and are altogether rather more bluish.

2. Manucodia rubiensis, Meyer, sp. nov.

M. chalybeatæ simillima, sed minor: long. alæ 155–160, caudæ 126–8, rostri 32–33 millim.

Hab. Rubi, Nov. Guin.

From this most southern point of the Bay of Geelvink, which is very remarkable in its ornithology, two examples (*Meyer*) lie before us, which are distinguished by their small size from those of other localities. Besides, the under surface of the neck seems to be green in place of blue, and the curling of the feathers is very slightly developed. The bill is but little stronger than in *Phonygama keraudreni.*

3. Manucodia atra (Less.).

Examples of this species from the Aroo Islands seem rather larger than those from the Bay of Geelvink (Dorey, Passim, Inwiorage: *Meyer*).

Guillemard (P. Z. S. 1885, p. 646) is of opinion that *M. atra* and *M. chalybeata* are not specifically different, although the form and size of the bill are alone sufficient to prove this idea untenable. Moreover, Guillemard's alleged reason, that it is not probable that two so nearly allied species should occur in the same district, is untenable for New Guinea, as there are many analogous cases known. The same author gives measurements of *M. jobiensis* smaller than those of Salvadori; but these differences are perhaps attributable to sex.

4. Phonygama purpureo-violacea, Meyer, sp. nov.

P. keraudreni similis, sed dorso, alis caudaque purpureo-violaceis, concoloribus, et occipitis collique plumis valde elongatis distinguenda: long. tota 300, alæ 166–167, caudæ 130, rostri 30–31, tarsi 34 millim.

Whole upper surface up to the head and neck beautiful purplish violet; under surface green, with bluish glance, especially on the sides; under surface of wings and tail greyish black. Side-feathers of the head still more lengthened than in *P. keraudreni,* the neck-feathers all around broader and markedly longer, and bluish green in colour, like the whole head, tipped with blue only on the nape. The upper mandible is furrowed longitudinally, of which there is only a slight appearance in *P. keraudreni,* and the base of the bill is rather narrower.

This species differs from *P. keraudreni* in the uniform coloration of the wings and back, as also in the brilliancy and nuance of the colour, besides in the much lengthened head- and neck-feathers. From *P. hunsteini,* Sharpe (Journ. Linn. Soc., Zool. xvi. p. 442), it differs in its smaller size, which agrees with that of *P. keraudreni*; moreover, there is no blue in *P. hunsteini,* and the head is oil-green, whereas it is bluish green in *P. purpureo-violacea.* Sharpe is of opinion that *P. hunsteini* comes from Normanby Island.

5. PAROTIA LAWESI, Ramsay, Pr. Linn. Soc. N. S. W. x. p. 243.

Mr. Ramsay has described only the male of this species, of which the female differs from the corresponding sex of *P. sexpennis* more than the male.

Fem. Supra brunnea; capite et collo nigris; corpore subtus brunnescente, nigro transfasciolato; subalaribus obscure cinnamomeis: long. tota 250, alæ 142–144, caudæ 100, rostri culm. 15, rostri hiatus 34, tarsi 45 millim.

The female of *P. sexpennis* is silver-grey on the under surface, with undulating punctures of black and yellow, and similar under wing-coverts. That of *P. lawesi* is below bright reddish brown, with black cross markings, and has uniform chestnut-brown under wing-coverts. At the back of the head the feathers are lengthened and are of a dark chestnut-brown narrowly edged with black, and with black bases; the feathers on the sides of the head are not so much lengthened as in *P. sexpennis.* Thus, although the upper surfaces of the two females are nearly similar, except for the longer tail of *P. sexpennis,* their lower surfaces are altogether different.

The young male of *P. lawesi* is like the female, but is not of so light a red-brown above, has a black neck, and on the under surface is of a deeper and brighter brown-red colour. The length of the tail is 100 millim.

The principal differences between the males of the two species are as follows:—The frontal feathers of *P. lawesi* form not a broad but a narrow plaque, and their tips converge in the middle into a straight line running backwards; the plaque is narrowed and prolonged behind, where it passes into a dark olive-brown. The neck-shield is of a uniform steel-blue with violet nuance, instead of green and blue. The vinous-red silky tinge of the upper surface is absent; its hue is much paler. The shortness of the tail is also especially noteworthy: in *P. sexpennis* it measures 130–135 millim., in *P. lawesi* only 84–88 millim.; so that the female and young male of *P. lawesi* have a longer tail than the adult male.

6. LOPHORINA MINOR.

Lophorina superba minor, Ramsay, Pr. Linn. Soc. N.S.W. x. p. 242 (1885).

Mr. Ramsay has described the male of this new species from South-eastern New Guinea. The female was unknown to him.

Fem. Similis feminæ *L. superbæ*, sed supra olivaceo-brunnea, minor, et tænia superciliari in occipite confluente, variegata, distinguenda: long. tota 220, alæ 120, caudæ 80, rostri culm. 21, rostr. hiatus 30, tarsi 28 millim.

The measurements of the female of *L. superba* are "wing 125, tail 95–100 millim." The head and neck are black in *L. minor* as in *L. superba*, but *L. minor* has on each side a broad superciliary stripe of white-spotted feathers which unite at the nape. In *L. superba* only slight indications of this superciliary stripe are perceptible behind the eyes. In *L. minor* the face and sides of the neck are spotted like the throat, in *L. superba* these parts are black. The lower surface of *L. minor* seems somewhat more yellowish than in *L. superba*, and the back, the smaller wing-coverts, and the tertials as well as the tail are olive-brown instead of dark chestnut-brown. The outer edges of the secondaries are broad and rusty brown in *L. minor*, in *L. superba* they are narrower and brown, and the inner webs of the wing-feathers beneath are broad and bright rusty brown, instead of being uniform blackish brown. Thus the females of the two species are quite distinct.

The principal difference between the males of the two species is in the scaling of the middle portion of the breast-shield, where in *L. minor* each feather bears a tongue-shaped velvety-black stripe, which does not quite reach to the point. Ramsay does not allude to this particular. Besides in *L. minor* the nasal plumes are shorter, while the chin-plumes are longer; the metallic plate at the back of the head is edged with violet, and the whole bird is somewhat smaller. Moreover, the outer feathers of the breast-shield appear to be considerably longer.

In a young male specimen the breast-shield is already somewhat developed, but not so the neck-shield; the colour of the former is reddish violet and already shows the black central stripes on the central feathers. The upper and under surfaces are as in the female, except the wings, which have begun to change. The superciliary stripes do not join at the back of the head, as is the case in the female. The head-shield shows the violet tinge stronger than in the adult male.

ASTRARCHIA, Meyer, nov. gen.

Rectricibus duabus intermediis longissimis, naviculiformibus, superne concavis et rectricibus lateralibus brevibus, a genere *Astrapia* differt.

7. ASTRARCHIA STEPHANIÆ, sp. nov.

Mas. Pileo nitide cæruleo et viridi-violaceo, fronte, loris et genis nitide viridibus, frontis plumis velutinis, erectis; capitis lateribus plumis longis, velutinis, viridibus, purpureo- et cupreo-violaceo ornatis; scapularibus, interscapulio, dorso, uropygio, axillaribus et hypochondriis nigro-velutinis, sub quadam luce olivaceo-nitentibus; supracaudalibus nigro-velutinis; gula, gutture et collo antico æneo-viridibus, sub quadam luce cærulescentibus, colli lateribus plumis longis ornatis; fascia pectorali lata nigra, sub quadam luce olivaceo et lilaceo nitente, fascia nitidissime cuprea cincta; corpore subtus obscure cupreo-velutino, sub quadam luce viridi; crisso et subcaudalibus nigro-violaceis; tibiis violaceo-nigris; alis et alarum tectricibus nigris, plus minusve purpureo-nitentibus; subalaribus violaceo marginatis; rectricibus duabus intermediis longissimis, naviculiformibus, superne concavis, nitide roseo-violaceis, subtus nigris; rectricibus lateralibus brevibus, superne concavis, supra et subtus nigris; rectricum duarum intermediarum scapis supra ad basin albis; rostro nigro; pedibus nigris; iride nigra: long. tot. 840, al. 156, caud. 64, rostr. 25, rostr. hiat. 30, tarsi 41 millim.

Male. Nasal feathers, directed rather forwards, velvety black tipped with shining metallic green and blue; loral feathers recumbent, directed forwards, shining green; region round the eye likewise metallic green; rest of the head a mixture of metallic green, blue, violet, and purple. Lengthened feathers on the sides of the head velvet-black, with metallic reflections passing from green into violaceous copper-colour and bronze. Neck and upper back velvety black with greenish bronzy reflections; the feathers long and loose; upper tail-coverts black. Wings above black, secondaries on the outer webs, tertiaries on both webs, and upper wing-coverts with slight violet reflections; lower surface of wings blackish, under wing-coverts partially edged with violet. Chin, throat, and front of neck steel-green, with metallic reflections; the covered basal portions of the feathers brownish black, separated from the broad green apical portions by a concealed narrow blue band; the whole of the feathers of the neck-shield in some lights blue, and lengthened, except those on the sides of the throat. A broad band across the breast, almost two centimetres in diameter, is velvet-black, with bronzy, greenish, blue, and violet reflections; this is bordered below by another band of metallic copper four millimetres in breadth. Belly velvety black, with copper-brown and green reflections. Under tail-coverts black, with a bluish tinge. The flanks and axillaries resemble the upper surface. The thighs are violet-black. Tail black; the webs of two elongated middle rectrices, which are turned upwards and arched together, are of a delicate rosy purplish with metallic gloss; the shorter and less concave lateral rectrices are less metallic, and the bands of shading are less pronounced. The basal third of the shafts of the two middle tail-feathers on their upper surface are clear white; the rest of the shafts black. Bill, feet, and irides black.

It is especially the form of the tail that gives us the opportunity of separating this new species generically, inasmuch as the subdivision of the Paradise-birds into genera has now-a-days been carried to so great an extent, whether rightly or wrongly we need not at the present moment inquire. The webs of the two central tail-feathers (about 10 centimetres broad and 64 long) are arched upwards towards one another so as to form a sort of open channel; towards the ends their edges approach so near one another as to constitute a broadened pipe; the webs of the lateral feathers are similarly turned up, but to a less extent. While the tail of *Astrapia nigra* is regularly graduated, in that of *Astrarchia* the graduation is irregular. But besides this, the deviations from *Astrapia* are so numerous that the generic separation can be well substantiated.

In *Astrarchia stephaniæ* the lengthened feathers of the chin are wanting, and the feathers of the neck-shield are not curved upwards, but smooth and recumbent. Besides, in *Astrarchia* the large lateral head-plumes are wanting, although the corresponding feathers are somewhat elongated. Again, the metallic band from the eye down the neck to the breast and the green band at the back of the neck are both absent, besides which there are other minor differences in coloration, which it is not necessary to enumerate. It need only be remarked that the colour of the middle tail-feathers is more blue in *Astrapia nigra* than in *Astrarchia stephaniæ*.

We have only the male of this species, which has been named by Finsch after the Archduchess Stephanie, Crown-Princess of Austria.

8. Epimachus meyeri, Finsch, sp. nov.

Fem. Supra brunnescenti-olivacea; capitis plumis obscure fuscis, rufo marginatis, nucha rufescente; loris et capitis lateribus nigrescentibus, clarius variegatis; gutture iisdem coloribus, sed subtiliter transfasciolato; corpore subtus et subalaribus fasciis alternis nigrescentibus et brunnescenti-albidis ornatis; alis dorso concoloribus, subtus fuscis; cauda olivacea, supra vix brunnescente tincta, subtus pallidiore; rostro et pedibus nigris; iride cærulea: long. tot. circa 540–550, al. 158–160, caud. 320, rostr. 73, tars. 42 millim.

Of this species we have only a female, which, however, is easily distinguished from the female of the allied *E. speciosus* by its more olive-coloured upper surface, by the want of the rusty-red colour on the wings, by the brighter reddish brown of the head, which is also extended on to the nape, by the scale-like appearance of the head, and, lastly, by the fine undulations of the whole under surface. The bright cross stripes are more olive-yellow than in *E. speciosus*; the under surface of the wings is uniform blackish grey with scarcely brighter margins instead of the reddish-brown inner webs of *E. speciosus,* and the tail has no reddish tinge. The bill is but slightly longer than in *E. speciosus,* but considerably more compressed and less curved.

That this is not the unknown female of *E. ellioti,* Ward, is evident from the length of the bill, which in *E. ellioti* is 50 millim. This is besides unlikely on other grounds. In *E. speciosus* the bill is of about the same length in both sexes. It is evident that the unknown male of *E. meyeri* will probably be found to differ in not unimportant points from *E. speciosus.*

9. Drepanornis cervinicauda, Sclater.

D. albertisi similis, sed minor et pallidior.

The difference in the general size of the two species is not very considerable, but the measurements of the bill and tail are sufficiently different to make their constant variations of importance when accompanied by appreciable diversities in colour.

The whole upper surface in *D. cervinicauda* is brighter, the back is more of a yellow-olive instead of brownish olive, as in *D. albertisi*; the lower back and rump rusty yellow instead of rusty red, the tail pale yellow instead of rusty yellow; the edgings of the inner webs of the tertiaries are like the tail, whilst in *D. albertisi* the tail is much darker. The reddish-blue sheen of the head, which is so apparent in *D. albertisi,* is altogether, or almost altogether, wanting in

D. cervinicauda; the tufts of feathers above the eyes are very small and consist only of a few feathers, whereas they are larger in *D. albertisi*; the naked spaces on the back of the head are less extended in *D. cervinicauda* than in *D. albertisi*; the underside of the tail in *D. cervinicauda* is not much brighter than in *D. albertisi,* so that there is a much greater contrast between the two surfaces in the latter. Lastly, the inner webs of the inner surface of the wings are broadly edged with isabelline colour in *D. cervinicauda,* whereas in *D. albertisi* these edgings have a strong brownish tinge.

The females are still more different in colour, inasmuch as in *D. albertisi* the whole upper surface is rusty brown, while in *D. cervinicauda* it is olive with the exception of the tertials and the rump, which are rusty brown, but always appreciably brighter than in *D. albertisi.* Again, the tail is considerably brighter above, but nearly similar below. The under surface of the body of *D. cervinicauda* is also rather brighter, and apparently less regularly banded.

Drepanornis bruijni, Oust., from the eastern coast of the Bay of Geelvink, is a perfectly distinct species from *D. albertisi* and *D. cervinicauda,* as Oustalet's description * and examples of it now before us (from 136½° to 137° E. long.) show. Especially remarkable is the stronger and light-coloured bill. The full plumage of this species is not yet known, unless it turns out that both sexes are clad alike in dull plumage as in the specimens already obtained.

Drepanornis cervinicauda was placed by Salvadori (Orn. Pap. ii. p. 553 and iii. p. 552) under *D. bruijni* and *D. albertisi* with a quære, by Ramsay (Proc. L. S. N. S. W. iv. p. 469) and Sharpe (Journ. Linn. Soc., Zool. xvi. p. 445) cursorily under *D. albertisi,* until Sclater (P. Z. S. 1883, p. 578) distinguished the southern form as *D. albertisi cervinicauda,* and Sharpe figured it in Gould's 'Birds of New Guinea' (pt. xviii. 1884, pl. 1) as *D. cervinicauda.* Our view is that the specific rank is correct in this case, as in that of so many other representative species in the ornis of New

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* *Cf.* Oustalet, Bull. Assoc. Sci. de France, 1880, p. 172; Ibis, 1881, p. 164; Guillem. P. Z. S. 1885, p. 649.

Guinea. As regards the shades of coloration now in question, the figures of *D. albertisi* given by Sclater (P. Z. S. 1873, pl. xlvii.) and Gould (B. New Guin. pt. i. pl. iii. 1875) are of little value.

10. CRASPEDOPHORA INTERCEDENS, Sharpe.

Milne Bay.

To distinguish between this species and *Craspedophora magnifica* is difficult; the differences are certainly small. It seems that in the male the upper surface, especially on the tertiaries, in a particular light, when the direction of the eye is nearly parallel to the upper surface of the bird, tends rather more to blue than to purple as in *C. magnifica*; other obvious differences it is not easy to discover. On the other hand the female differs still more, as Sharpe (Journ. Linn. Soc., Zool. xvi. p. 444) has pointed out. Certainly the upper surface is brighter and the eye-stripe is not blackish; but that the lower surface is different, as Sharpe maintains, is not apparent in the examples from Milne Bay.

The differences from *C. alberti* are also pointed out by Sharpe, *l. c.*, and those of the female of the last named species agree with the characters given by Salvadori (Orn. Pap. ii. p. 558). The upper surface of *C. alberti* passes into olive, which is not the case in *C. intercedens*, although it does not appear to have so much of a chestnut-brown tinge as *C. magnifica* (*cf.* Salvadori, op. cit. p. 553). But I do not doubt of the constant difference of the Southern New-Guinea form from those of North-western New Guinea and Australia, although the divergence is small. *C. intercedens*, however, seems to approach more nearly to *C. magnifica* than to *C. alberti*.

11. PARADISEA FINSCHI, Meyer, sp. nov.

Mas. P. minori similis, sed minor, et dorso, uropygio et corpore subtus brunnescentibus: long. rostri 31, tarsi 40 millim.

Hab. Nova Guinea septentrionalis-occidentalis, Karan.

"I obtained only imperfect skins of this species from the natives of the north-east coast (Emperor William's Land) at

142° 30′ E. long., about 60 miles west of D'Urville Island: on the Admiralty chart 'Passir Point' is marked here, but on such point exists in reality. Only at this one spot on the north coast did the natives bring Paradise-bird skins for sale along with ornamental plumes of *Dasyptilus*. All skins from this locality are small in dimensions." (*Finsch.*)

The single native skin which constitutes the type of this species has the brown of the upper surface not pure chestnut, as in *P. minor*, but paler brown, and the under surface is not chestnut-brown with a vinous tinge as in *P. minor*, but more of a reddish brown. These variations in colour are very noticeable. Besides, *P. finschi* differs from *P. minor* in the size and the form of the bill, which is more slender and elongated in the latter; its length in *P. minor* reaches 32–35 millim. in specimens in the Dresden Museum. There seems to be also a difference in the colour of the upper mandible, which in *P. finschi* has a light-coloured culmen.

In Western New Guinea *P. minor* occurs, in Southern New Guinea *P. novæ-guineæ* (Salvad. Orn. Pap. ii. p. 609), the latter approaching *P. apoda* of Aroo. From the north-east of the great island no example of this form has yet been brought, although we are assured of its occurrence there, for example in Astrolabe Bay. It may be presumed that the north-eastern form will be nearer to *P. minor* than to *P. apoda*, because the great central chain of New Guinea running from east to west cuts off the north from the south. It would be interesting to ascertain whereabouts on the north coast *P. minor* passes into *P. finschi*.

[The first species of Paradise-bird obtained from Emperor William's Land bears appropriately the name of its discoverer, who at the same time was the first to mark out the new German colony.—M.]

12. Paradisea raggiana, Sclater.

Astrolabe Mountains and Milne Bay.

At fifteen miles in the interior from Port Moresby, according to Hunstein, this species is first met with, but does not occur on the Horseshoe Mountain. It extends to Basilisk Island and westward to Bentley Bay.

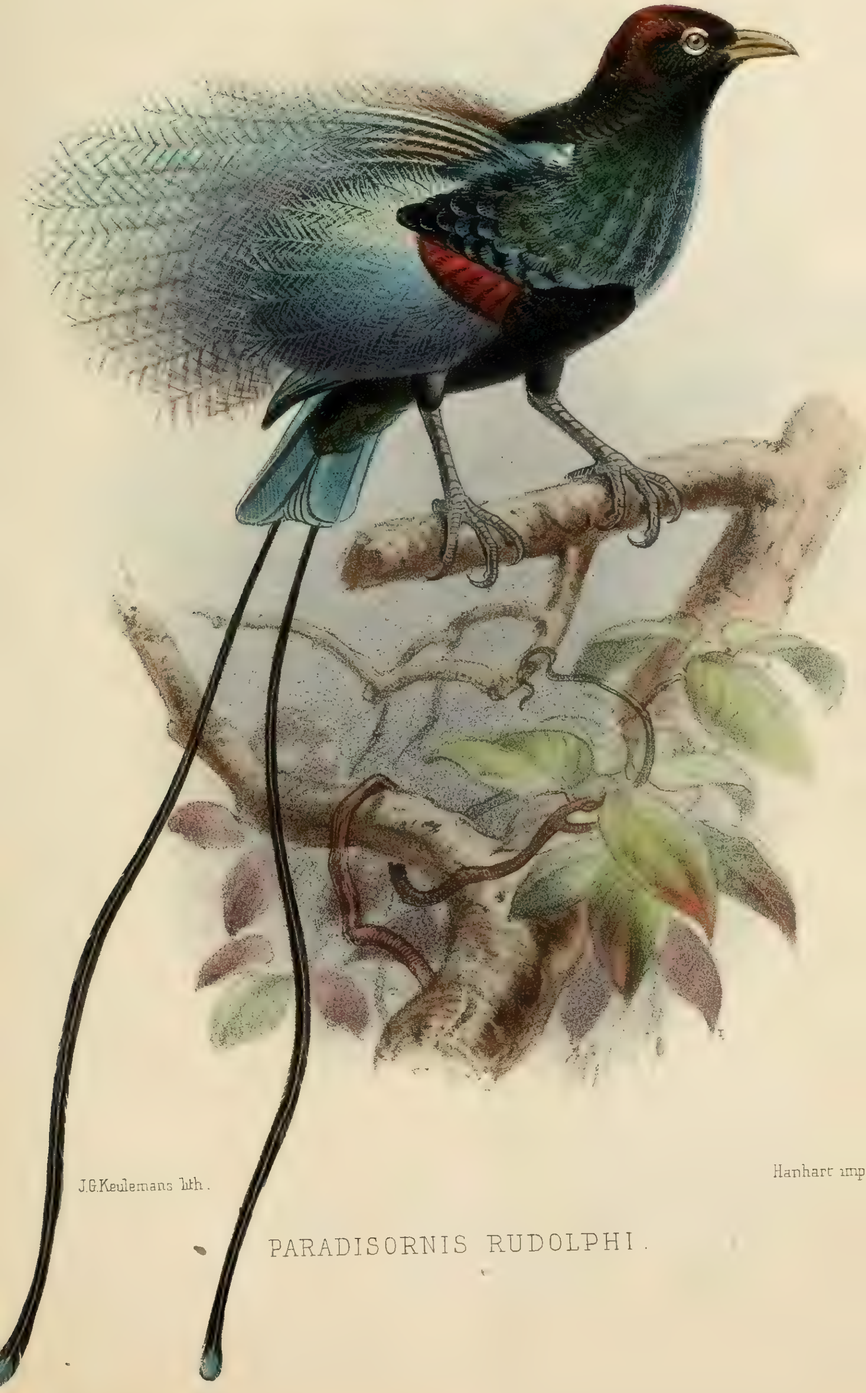
Examples from Milne Bay seem to have the brownish-violet breast-shield rather darker and the parts immediately below also darker than examples from the Astrolabe Mountains. In the latter also there appears to be a yellowish nuance on the green throat-feathers, instead of the bluish nuance of the former. The Milne-Bay specimens measure about half a millimetre more in the length of the wing, and also show a rather more yellowish nuance on the undersides of the wings and tail when the direction of the eye is parallel to the light falling upon it. But all these apparent differences are very slight, and there is not sufficient evidence of their constancy to separate the birds as local forms. At the same time it is right to notice these small differences occurring in neighbouring localities in order to arrive at a correct knowledge of the variation of species in connection with geographical distribution.

PARADISORNIS, Meyer, gen. nov.

Rostro altiore, magis compresso et curvato, rectricibusque duabus intermediis angustis, spatuliformibus, a genere *Paradisea* differt.

13. PARADISORNIS RUDOLPHI, sp. nov. (Plate VII.)

P. rudolphi mas ab omnibus *Paradiseis* hucusque notis paracercorum plumarum forma et colore cæruleo-cyaneo differt. Sincipite, loris, genis, mento, gula et gutture plumis velutinis, nigris, nitide obscure flavo-virescentibus; regione postoculari nuda; oculis supra et subtus plumis nitide albis, longis, sericeis ornatis; occipite obscure purpureo-castaneo nitente; nucha et interscapulio nitide nigrescentibus, plumis basin versus cinerascentibus, medio cyaneis, apicibus nitide nigrescentibus; dorso et uropygio cærulescenti-nigro variegatis; cauda supra cærulescente; alis supra cærulescenti-cyaneis, remigum pogoniis internis nigris, alarum tectricibus cyaneis, tertiariis interne clarius cyaneo marginatis; pectoris plumis longis nigrescentibus, abdomen versus virescenti-cæruleo nitentibus; abdomine et tibiis nigris, nitentibus; cauda subtus cyanescente, subcaudalibus virescenti-nigricantibus; alis subtus fuscis, remigum primariorum



J.G.Keulemans lith.

Hanhart imp

PARADISORNIS RUDOLPHI.

marginibus internis cinereis, secundariorum cyanescentibus; subalaribus brunnescentibus, fusco variegatis; axillaribus subtus virescenti-cyaneis, supra brunnescentibus; paracercorum plumis longis, rectis, subrigidis, exterius brunneis, intus ad basin ultramarinis, apicem versus violaceo-lilacinis, brevibus, plus minusve curvatis, ad basin cyaneis, medio ultramarinis, apicem versus cyaneis paulo virescentibus, harum tectricibus brevioribus nigerrimis, longioribus curvatis, pulchre castaneis; rectricibus duabus intermediis longissimis, angustis, spatuliformibus, supra violacescentibus, subtus nigris, spatulis macula cyanea ornatis; rostro flavido-albo; pedibus brunnescentibus (?); iride brunnea: long. tot. circa 270, al. 160, caud. 80, rectr. intermed. 440, rostr. culm. 38, a nar. 29, tars. 37-38, paracerci plumis longis 270 millim.

Fem. Capite, collo et summo dorso nitide obscure purpureo-nigris, colli plumis lateralibus et posticis longis; palpebris sicut in mari; summi dorsi plumis longis, velutinis, parte media obtecta et subtus virescenti-cyaneis; dorso imo et uropygio virescenti-nigris; supracaudalibus et cauda cyanescenti-cæruleis; alis sicut in mari; gula virescenti-nigra; gutture et pectore summo obscure castaneis, obsolete nigro transfasciolatis, plumis subtus plus minusve virescenti tinctis; abdomine summo virescenti-brunneo, medio et imo brunnescentibus, nigro transfasciolatis, medio plumarum apicibus cyaneis, omnibus subtus cyaneo-virescentibus; hypochondrii plumis longis, obscure brunneis, nigro transfasciolatis, subtus virescenti-cyaneis; tibiis nigris; crisso et subcaudalibus rufescentibus; cauda subtus virescenti-cyanea transfasciolata; rostro flavido-albo; pedibus brunnescentibus (?); iride brunnea: long. tot. circa 270, al. 153, caud. 94, rostr. culm. 32, rostr. hiat. 36, tars. 48 millim.

Male. Front and sides of the head, neck, and shoulders satiny black, with dark yellowish-green metallic sheen, which disappears behind; eyelashes long, white, silky; behind the eye a naked spot; back of head and nape dark cherry-brown. Back greenish blue mixed with black. Wings above blue, in front brighter, the lesser and middle coverts edged with bright blue, as also the tertiaries on the inner webs; inner webs of the wings black; breast-shield with long feathers, blackish, in certain lights alternately

glancing bluish and greenish; towards the belly terminating in a well-defined broad blue cross band, and on the sides passing into the ultramarine of the ornamental plumes. Belly shining satiny black. Under wing-coverts brownish mixed with dark grey. Axillaries exteriorly brownish, interiorly bluish green. Under surface of the wings blackish grey, with brighter inner edgings on the primaries and bluish on the secondaries. The ornamental plumes are divided into two portions: the larger outer ones are rather rigid, and on the underside are bright ultramarine blue at their bases and pass into lilac; on their upper sides, *i. e.* on the hinder sides, they are shining brown; the shafts of these feathers above at their bases are white, with the end half brown, below they are entirely bright brown. The smaller inner ornamental plumes, which are in part strongly curved inwards, are bright blue at their base, in the middle portion ultramarine or cobalt-blue, passing towards the apices into bright greenish blue; upon the smaller ornamental plumes lie as coverts a row of shortened chestnut-brown feathers strongly curved, and upon part of them another row of black feathers. The tail is blue above with brighter edgings, and dirty greenish at the base; below it is uniform bright blue. The two lengthened middle tail-feathers carry at their bases brownish webs on a white shaft; at the end of the other tail-feathers these webs disappear almost entirely, and then again gradually increase to a breadth of half a centimetre the two together; the spatula-shaped tips are about 7 millim. in diameter; the colour of these feathers is above black changing to violet; below black, with a light bright blue spot at the tip; the shafts are black both above and below. The bill is yellowish white; the feet (in the dried skin) brownish horn-colour; the iris (according to Hunstein's information) is brown.

Female. Flank-feathers loose and lengthened, on their inner sides greenish blue; belly rusty reddish with dark cross bands; the feathers on their undersides bluish green. Tail beneath with lightly marked shadings, which disappear towards the tail-end. Thighs black. Feathers of the upper back long, loose, satiny black, beneath greenish blue. Side-feathers of the hinder neck lengthened and erectile.

This species has been named by Finsch *Paradisornis rudolphi,* in honour of his Imperial and Royal Highness Rudolph, Crown-Prince of Austria, the high and mighty protector of ornithological researches over the whole world.

14. DIPHYLLODES CHRYSOPTERA, Gould.

Mas. Mari *D. magnificæ* similis, sed alis supra pulchre aurantiacis et interscapulio brunnescenti-sanguineo diversus.

Hab. Nova Guinea merid.-orientalis.

This species was separated from *D. magnifica* by Gould upon examples of unknown origin. But subsequently it was supposed that its habitat had been ascertained to be Jobi (*cf.* Salvadori, Orn. Pap. ii. p. 641), until Sharpe (Journ. Linn. Soc., Zool. xvi. p. 444) announced that he had compared Gould's types with examples from Southern New Guinea, and found them to be perfectly identical. He thus raised the question whether Jobi birds agree altogether with Gould's types and with specimens from Southern New Guinea. Examples from Jobi now lie before us, and are not identical with those from Southern New Guinea. Gould's types were certainly from Southern New Guinea, and to the species from that country the name *chrysoptera* must therefore belong, whilst the Jobi bird must be separated. It is true that Gould's figure does not agree with examples from Southern New Guinea, as Salvadori has already pointed out, but Sharpe's decision as to the full identity of Gould's types with specimens from this locality settles the question.

D. chrysoptera differs from *D. magnifica* not only in the bright orange-yellow colour of its wings, as given by Sharpe (Cat. Birds, iii. p. 175), but also in the blood-red colour of the hind neck-feathers, which in *D. magnifica* are only chestnut-brown or dark brownish red. Besides, the colour of the head, which in *D. magnifica* is brownish, is light orange-brown in *D. chrysoptera,* and the colour of the belly is bright purple, whereas in *D. magnifica* it has but a trace of this colour, and the breast-shield is more of a blue-green than a grass-green. The females are likewise different. The head, rump, and under tail-coverts are browner in *D. chrysoptera* than in *D. magnifica*, and the feathers of the front of the head have a very noticeable orange-brown tinge, reminding one of these parts in the male. The dimensions are also different :—

D. chrysoptera	♂:	wing 105–108·5,	tail 38–40	millim.
	♀:	„ 103–112,	„ 56–60	„
D. magnifica	♂:	„ 116,	„ 50	„
	♀:	„ 112,	„ 64	„

It is surprising that Sharpe says nothing about these differences.

15. Diphyllodes jobiensis, sp. nov.

Paradisea speciosa, part., Schlegel, Ned. T. Dierk. iv. pp. 17, 50 (1871) ; Rosenberg (nec Bodd.), Reis. Geelv. p. 56 (1875) ; id. Mal. Arch. p. 557 (1879).

Diphyllodes chrysoptera, Meyer, Mitth. Zool. Mus. Dresden, i. p. 6, Anm. (1875) ; Beccari, Ann. Mus. Civ. Gen. vii. p. 710 (1875) ; Salvadori, ibid. p. 971 (1875), ix. 192, no. 21 (1876) ; Sharpe, Cat. iii. p. 175 (1877) ; Salvadori, Orn. Pap. ii. p. 641 (1881).

Mas. Mari *D. magnificæ* similis, sed alis supra flavo-aurantiacis diversus.

Hab. Ins. Jobi.

The male of *D. jobiensis* is distinguished from that of *D. magnifica* by the orange-yellow colour of the wings, which have a tinge of ochre, and by the slight bronzy and brown glance on the belly. The length of the wing is 113–114 millim., of the tail 48–50 millim. The female is very different from that of *D. magnifica*, being of a brownish grey instead of olive-brown, except on the edgings of some of the secondaries, which are more brownish ; the underside is of a clearer whitish. Length of the wing 113 millim., of the tail 65 millim.

16. Diphyllodes hunsteini, Meyer, sp. nov.

Mas. Mari *D. chrysopteræ* similis, sed alis supra aurantiaco miniatis diversus : long. tot. circa 185, al. 111–112, caud. 53, rostr. hiat. 32, rostr. culm. ab apice plum. front. 18·5, tars. 29 millim.

Hab. Nova Guinea (Horseshoe range).

An immature male, but differing from *D. chrysoptera* in such a way that it is not possible to ascribe the peculiar characters to its stage of life. The colour of the wings is much more brilliant than in *D. chrysoptera*; the nasal plumes are longer; the back and rump are still more of a reddish brown; the belly is not violaceous, but like that of *D. magnifica,* and tinged with greenish on the sides; the breast-shield is rather grass-green than bluish green; the inner webs of the wing-feathers beneath more reddish than in *D. chrysoptera.* The stage of the development of the tail is interesting; one of the two elongated middle tail-feathers has on both sides broad webs of a brownish colour (the broadest part of the whole feather measures 9 millim. across), with a central stripe of a metallic reddish violet, while the other has already acquired the narrow shape and bluish-green metallic colour of the adult. The great length of the remaining tail-feathers may perhaps be explained by the fact that the female *Diphyllodes* has usually a longer tail than the male. It may be objected that it is possible that the immature form of this *Diphyllodes* may be more brilliant than the adult; but on the other hand a young male of *D. magnifica,* almost in the same stage as the preceding, does not differ in the colour of the wings from the adult bird.

17. AMBLYORNIS SUBALARIS, Sharpe.

Sharpe described in 1884 (Journ. Linn. Soc., Zool. xvii. p. 408) only the female of this species. The male possesses a deep orange-red erectile hood: it is otherwise like the female which Sharpe describes, but altogether rather more olivaceous, and has bright shaft-stripes on the throat; the reddish orange-coloured hood is bordered on the sides with dark brown, and has dark tips on some of its middle feathers; the front is dark as in the female. The immature male has more black on the head. The bill is considerably smaller than in *A. inornata.*

18. Ælurœdus stonei, Sharpe.

A specimen of this species has a greenish head with yellowish stripes in the middle, and a yellowish forehead, no doubt the remains of the immature plumage.

19. Ælurœdus melanocephalus, Ramsay.

This species has been lately founded by Ramsay (Proc. Linn. Soc. N. S. W. vii. p. 25). The following diagnosis will supplement his description:—

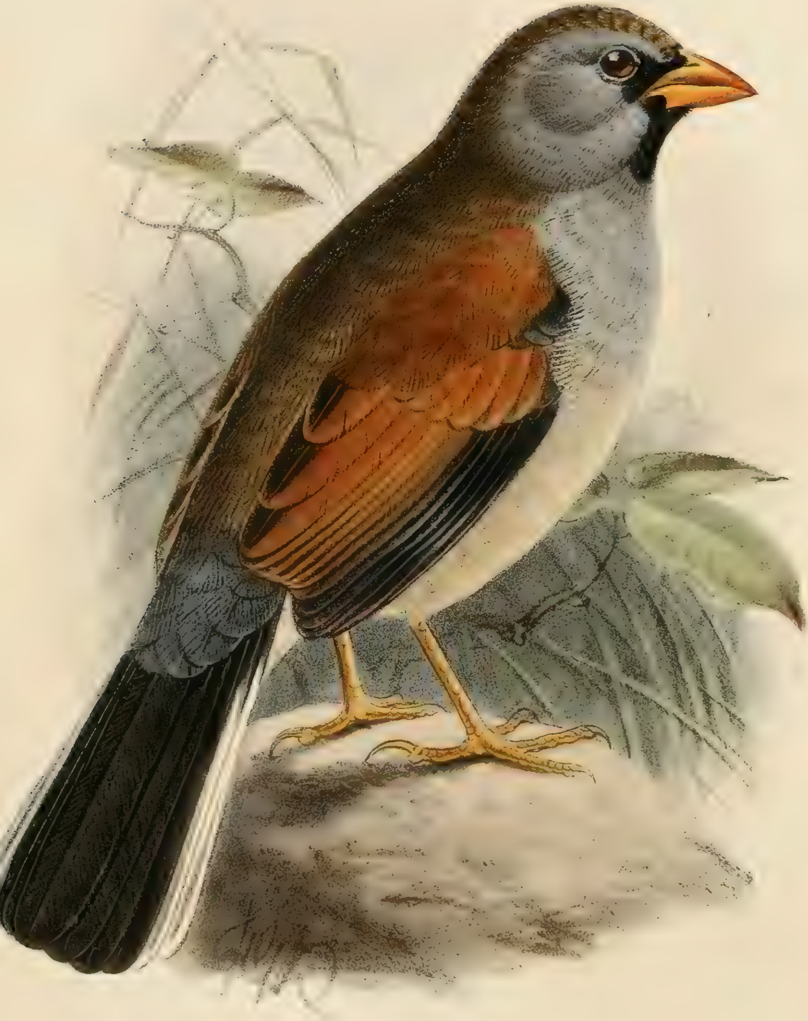
Æ. arfakiano, Meyer, similis, sed fascia nuchali nigra et maculis tectricum alarum nullis, jugulo et gutture variegatis, pectore et abdomine brunnescentibus diversus: long. tot. circ. 290, al. 152, caud. 120, rostr. 33, tars. 44 millim.

This species comes between *Æ. arfakianus* and *Æ. melanotis* of Aroo, but is nearest to the former. In its throat being not black it approaches *Æ. melanotis,* although this part is somewhat dark in *Æ. melanocephalus.* In its dark head it resembles *Æ. arfakianus,* but there is no sharply defined cervical band. The uniform green wing-coverts remind one of *Æ. buccoides* of Western New Guinea and *Æ. stonei* of Southern New Guinea. *Æ. melanocephalus* seems to be darker than *Æ. arfakianus* on the under surface of the tail, and to have a narrower terminal band. The feathers of the throat in *Æ. melanocephalus* are black at the bases and tips, but have a broad white intermediate band, so that the white predominates, whereas in *Æ. arfakianus* the black predominates. The whole under surface is washed with olive-brown, and is much darker than in *Æ. arfakianus* and *Æ. melanotis.*

XXX.—*Description of a new Ground-finch from Western Peru.* By P. L. Sclater, M.A., Ph.D., F.R.S.

(Plate VIII.)

My excellent and much valued correspondent, Prof. William Nation, of Lima, has lately sent me a single skin of a Ground-finch from the upper valley of the Rimac, which seems to belong to an undescribed and very distinct species



JGKeulemans lith.
Hanhart imp.

HÆMOPHILA PULCHRA

of the genus *Hæmophila.* It is evident from the specimens previously forwarded by Prof. Nation from the same district*, as also from the fine novelties in plants recently gathered by Mr. John Ball in the upper valley of the Rimac, that there is still much to be done by collectors on the Transandean slopes of Peru.

The Ground-finch I propose to characterize as

HÆMOPHILA PULCHRA, sp. nov. (Plate VIII.)

Supra cinerea, præcipue in interscapulio, brunneo lavata; fronte, loris et spatio inter lora et gulam nigris: alis nigris; secundariorum limbis externis latis cum horum tectricibus et scapularibus adjacentibus distincte castaneis; tectricibus minoribus cinereis: caudæ vix rotundatæ, nigræ, rectricibus duabus externis pro majore parte albis, proxima utrinque laterali albo terminata: subtus cinerea, gula nigra, ventre et crisso albis; lateribus fulvo tinctis; subalaribus albis; alarum pagina inferiore cinerea: rostro et pedibus flavis: long. tota 6·2, alæ 2·8, caudæ 2·8 poll. Angl.

Hab. Peruvia occidentalis, in valle fl. Rimac, ad alt. 7000–8000 ped.

The black face and throat, chestnut scapulars, and pale yellow bill and feet render this species quite unmistakable. The wings are short, the third and fourth primaries slightly exceeding the second and fifth in length. The feet are not strong for a bird of this group. The bill is rather elongate, and the culmen slightly incurved. It would not, in fact, be difficult to make out new generic characters for this species; but for the present I propose to put it in *Hæmophila*, of which there is already one species known from Western Peru (*H. stolzmanni*).

The single specimen received was obtained by a correspondent of Prof. Nation at Matucana, in the upper valley of the Rimac, which is about 8000 feet above the sea-level. It was found flying about on the low bushes near the river. The sex was noted "male;" the irides "black," bill and feet "bright yellow."

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* See articles on the birds of Western Peru by P. L. Sclater and W. Nation in P. Z. S. 1866, p. 100; 1867, p. 340; 1869, p. 146; 1871, p. 496.

XXXI.—*Notes on Woodpeckers.*—No. XII. *On the Genus* Chrysophlegma. By EDWARD HARGITT, F.Z.S.

In the present genus I have only included six species, one of which, *C. mystacale* of Salvadori, has been described since Malherbe published his monograph. The remaining yellow-naped species, which modern authors place either in this genus or in *Callolophus*, are to my mind true *Gecini*, and I have therefore transferred them to the genus *Gecinus*. The introduction of a species bearing the name of *C. squamicollis* will possibly create some surprise amongst ornithologists; but the Malaccan bird hitherto designated *C. mentale* turns out not to be true *C. mentale* of Temminck. The only author who has remarked the specific difference between the Javan and the Malaccan birds appears to have been Reichenbach, who, in his ‘Handbuch,’ after giving a clear description of the Malayan species, made the mistake of calling it *Venilia mentalis*—a name which, as I show below, belongs absolutely to the Javan bird. In the same work he names another species *Venilia gularis*, which, from the description given, is most certainly the true *C. mentale* of Temminck, from Java. In my notes attached to the species I have more fully entered into the subject, and, I hope, have proved satisfactorily that Lesson's title *squamicollis* must be employed for the Malaccan species. Reichenbach includes only two yellow-naped species in the genus *Chrysophlegma*, and places the others in the genus *Venilia*. Sundevall, in his ‘Conspectus Avium Picinarum,’ under Tribus 18 (*Pici flavinuchales*) comprises all the yellow-naped species which are included by the authors of our day in the genera *Chrysophlegma* and *Callolophus*; and Malherbe, in his ‘Monograph,’ places them in his genus *Chloropicus*.

In the preparation of this paper I have made use of the collection in the British Museum, and, through the courtesy of Dr. Günther and Mr. Sharpe, I have been permitted to examine the specimens of Picidæ contained in the superb collection recently presented by Mr. Hume to the British Museum, and brought to this country, at great personal risk, by Mr. Sharpe, to whom ornithologists will for ever be indebted. The Hume Collection possesses a large series of all the Indian species, including adult males and females and the young, carefully sexed and dated, and from almost every locality which the species is known to inhabit. With the advantages of having such a complete series placed before one for inspection, difficulties which were at first most perplexing became more easy of solution, and a knowledge of the changes of plumage more readily acquired, so that I am now enabled to place before the readers of 'The Ibis' many notes which appear to me to be interesting, and which I could not have supplied had it not been for this recent addition to our National Museum. I am also under many obligations to Dr. Jentink and Heer Büttikofer, of the Leiden Museum; and also to Dr. Oustalet, of the Paris Museum, who has given me much valuable information concerning the species of the present genus contained in the collection under his superintendence.

Key to the Species.

- *a*. Underparts uniform.
  - *a'*. Sides of the neck and the chest olive.
    - *a''*. Malar stripe yellow.
      - *a'''*. Chin and upper throat yellow .... *flavinucha*, ♂, p. 262.
      - *b'''*. Chin and upper throat olive-black, the former varied with rufous .... *mystacale*, ♂, p. 265.
    - *b''*. Malar stripe rufous.
      - *c'''*. Throat varied with white .... *flavinucha*, ♀, p. 262.
      - *d'''*. Throat not varied with white .... *mystacale*, ♀, p. 265.
  - *b'*. Sides of the neck and the chest rufous.
    - *c''*. Malar stripe dusky brown, spotted with white.
      - *e'''*. Throat black, spotted with white .. *mentale*, ♂, p. 267.
      - *f'''*. Throat striped black and white .... *squamicolle*, ♂, p. 269.
    - *d''*. Malar stripe rufous.
      - *g'''*. Throat black, spotted with white .. *mentale*, ♀, p. 267.
      - *h'''*. Throat striped black and white.... *squamicolle*, ♀, p. 269.
- *b*. Underparts crossed with wavy lines of brownish black.
  - *c'*. Upper parts strongly washed with red; yellow nuchal crest also washed more or less with red.

e''. Forehead and entire face more or less red, and together with the chin and throat nearly uniform .... *miniatum*, ♂, p. 273.

f''. Forehead and fore part of face brown, and together with the chin and throat distinctly spotted with blackish brown and buffy white .... *miniatum*, ♀, p. 273.

d'. Upper parts green varied with yellow, and having at most only a few spots of red; nuchal crest entirely yellow.

g''. Forehead and entire face more or less red, and together with the chin and throat nearly uniform .... *malaccense*, ♂, p. 276.

h''. Forehead and fore part of face brown, and together with the chin and throat distinctly spotted with blackish brown and buffy white .... *malaccense*, ♀, p. 276.

1. CHRYSOPHLEGMA FLAVINUCHA.

Picus flavinucha, Gould, P. Z. S. 1833, p. 120; Blyth, J. A. S. B. xii. p. 1003 (1843); Sundev. Consp. Av. Picin. p. 57 (1866); Giebel, Thes. Orn. p. 154 (1876).

Dryotomus flavigula, Hodgs. J. A. S. B. 1837, p. 106; id. Icon. ined. in Brit. Mus. nos. 167, 168; id. in Gray's Zool. Misc. 1844, p. 85.

Gecinus flavinucha, Gray, Gen. B. ii. p. 438, pl. cix. ♂ (1846); id. Cat. Mamm. &c. Nepal, Coll. Hodgs. p. 116 (1846); Blyth, Cat. B. Mus. As. Soc. p. 58 (1849); Irby, Ibis, 1861, p. 229; Gray, List Picid. Brit. Mus. p. 74 (1868); id. Hand-list B. ii. p. 191. no. 8679 (1870).

Chloropicos flavinucha, Malh. N. Classif. Mém. Acad. Metz, 1848–49, p. 350.

Chrysophlegma flavinucha, Gould, B. Asia, vi. pl. xxxvi. (1850); Bp. Consp. Gen. Av. i. p. 127 (1850); id. Consp. Volucr. Zygod. p. 10 (1854); Reichenb. Handb. Scans. Picinæ, p. 357. no. 824, pl. dcxxvii. figs. 4171, 4172, ♂ ♀ ad. (1854); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 662 (1856–58); Gray, Cat. Mamm. &c. Nepal, Coll. Hodgs. 2nd ed. (1863); Jerd. B. Ind. i. p. 289 (1862); Beavan, Ibis, 1865, p. 411; Bulger, op. cit. 1869, p. 156; Beavan, tom. cit. p. 414; Jerd. op. cit. 1872, p. 9; Hume, Str. F.

1874, p. 472; id. & Oates, op. cit. 1875, pp. 12 & 71; Blyth & Wald. B. Burm. p. 76 (1875); Hume, Str. F. 1877, p. 26; id. & Davison, op. cit. vi. p. 137 (1878); Hume, op. cit. 1879, p. 87; Bingham, op. cit. 1880, p. 164; Salvin, Cat. Strickl. Coll. p. 391 (1882); Oates, Str. F. 1882, p. 191; id. B. Brit. Burm. ii. p. 43 (1883).

Chloropicus flavinucha, Malh. Monogr. Picid. ii. p. 106, pl. lxxiii. figs. 1, 2, 3 (1862).

Adult male. Above, including scapulars, rump, upper tail-coverts, and wing-coverts, uniform vivid glossy green; bastard-wing brownish black, the feathers barred at the base with rufous; primary-coverts brownish black, externally margined with green and barred with rufous; quills brownish black, the outer webs of the inner primaries washed with red at the base, some being edged with bright green, and the whole barred with rufous; outer webs of the secondaries partially or entirely bright green, all (except the innermost) having rufous barring near the shafts; inner webs of all the quills barred with rufous, the tips of the innermost green; shafts blackish brown; tail black, the outer and dwarf feathers browner, the central being slightly margined at the base of the outer webs with greenish; shafts black; forehead rufous mixed with dull red, the crown more varied with olive; elongated occipital feathers olive, faintly striped with dull red; nuchal crest bright golden yellow; nasal plumes brown; lores and under the eye dirty yellowish green; ear-coverts and side of the face dingy olive; cheeks, chin, and throat lemon-yellow; side of the neck and fore neck blackish olive, the extreme base and basal margins of the feathers of the latter being white, partly visible, and giving a striped appearance; chest dull olive; underparts grey, with a dusky olive tinge, the thighs and under tail-coverts washed with yellowish; under wing-coverts yellowish on the edge of the wing, the remainder white, the whole being varied with pale rufous and barred with dusky olive; axillaries white, the outer webs tinged with dusky greenish; under surface of the wing black, broadly barred with rufous, the barring extending across the shafts; tips of the outer primaries greenish grey, and the tips of the shafts white: "bill dusky bluish white; iris red; eyelids, gape, and naked skin at gape greenish blue; legs dusky blue; claws horny" (*Oates*). Total length 13·0 inches, culmen 1·75, wing 6·5, tail 4·7, tarsus 1·1; toes (without claws)—outer anterior 0·87, outer posterior 0·8, inner anterior 0·6, inner posterior 0·4.

Immature male. Differs from the fully adult male in having the upper parts of a duller green, the feathers being margined with yellow; the forehead less rufous, and the crown and occiput less varied with reddish brown; the nuchal crest more orange; the lores and sides of the face more dusky, and the cheeks, chin, and throat of a paler and more dingy yellow; the underparts being smoky grey (without any tinge of olive), darker and browner on the chest.

Nestling, probably male. In this stage of plumage the crown and occiput are slightly paler than in older birds, the dull red markings partaking more of the character of spots or bars than of stripes; nuchal crest deep golden yellow; cheeks, chin, throat, and fore neck dull buffy white, the throat and fore neck having dusky brownish spots; underparts smoky grey, browner on the chest; under wing-coverts dull rufous varied with dusky. In other respects resembling the adult.

Adult female. Differs from the adult male in having the cheeks, chin, and upper part of the throat rufous, faintly striped with blackish, the bases of these feathers being white; lower throat and fore neck white, each feather having a large patch (somewhat triangular) of brownish olive, almost black at the apex; upon the fore neck a tinge of rufous surrounding the dark tip; the soft parts as in the male. Total length 13·0 inches, culmen 1·7, wing 6·63, tail 4·7, tarsus 1·15.

Immature female. Differs from the adult female in having the sides of the face darker green, the cheeks, chin, and upper throat less rufous and more mixed with black, and the tips of the feathers of the lower throat and fore neck blacker.

This species is found in the Himalayas as far west as

Masuri, extending into Assam and Cachar, and ranging south into British Burmah as far as the central portion of the province of Tenasserim, but not occurring so far south as Meetan. In writing upon this species, Dr. Jerdon remarks:—"Found throughout the Himalayahs extending from Assam to Burma. At Darjeeling I observed it chiefly in the zone from 2000 to 6000 feet." The most western locality to be found in Hume's series is Masuri; but he also has other specimens from the neighbourhood of Nynee Tal and Almora. Colonel Irby procured it on one of the lower hills between Nynee Tal and Kaleedonghee in Kumaon, and in the British Museum are several specimens from Nepal, collected by Mr. Hodgson. A large series from Sikkim, collected by the late Mr. Mandelli, is in the Hume Collection, and shows the species to be resident, as the specimens have been obtained in almost every month of the year; and according to Capt. Bulger it is seemingly common in the forests of that country, which extend downwards towards the Little Rungeet river. Mr. Inglis states that in North-eastern Cachar this Woodpecker is not uncommon, and that it remains all the year. He only met with it in dense jungles. McClelland obtained it in Assam. To the south, Mr. Blyth says it is not uncommon in Arracan; and Mr. Oates remarks that it is found commonly all over the Pegu Hills, but he did not meet with it in the plains. In Tenasserim, Messrs. Hume and Davison state that it is confined to the low hills and their neighbourhood, in the northern and central portions of the province, and the latter gentleman observes that it does not appear to get as far south as Meetan. Capt. Bingham says that it is fairly common in the Thounghyeen valley.

2. CHRYSOPHLEGMA MYSTACALE.

Chrysophlegma mystacalis, Salvad. Ann. Mus. Civ. Genov. xiv. p. 182 (1879); Wardlaw Ramsay, P. Z. S. 1880, p. 16; Nicholson, Ibis, 1883, p. 242.

Adult male. Entire back, scapulars, wing-coverts, rump, and upper tail-coverts yellowish olive, slightly golden;

feathers of the bastard-wing, likewise the primary-coverts, brownish black edged externally with olive; primaries brownish black, the outer webs of the innermost washed with dull red, partially edged with olive, and having bar-like spots of rufous, the inner webs clearly barred with rufous; outer webs of outer secondaries dull red margined with golden olive; inner webs brownish black barred with rufous; inner secondaries having the outer webs and tips of the inner golden olive, the remaining portion of the inner webs brownish black deeply notched with rufous (except the innermost, these being only margined with rufous at the base); shafts brownish black; tail and tail-shafts black; nasal plumes olive; forehead, crown, and elongated occipital crest golden olive, slightly rufous on the forehead and outer edge of the crown; nuchal crest bright golden yellow; lores and sides of the face and neck olive; a broad yellow cheek-stripe; chin and throat olive-black, the former varied with rufous; from the fore neck to the under tail-coverts (inclusive) olive, richer in colour on the chest; the outermost under wing-coverts olive, the inner ones black, barred with pale rufous; axillaries olive: "irides reddish brown; bill very pale blue; legs and feet bluish green" (*H. O. Forbes*). Total length 11·5 inches, culmen 1·5, wing 5·6, tail 4·6, tarsus 1·05; toes (without claws)—outer anterior 0·82, outer posterior 0·8, inner anterior 0·6, inner posterior 0·38.

Adult female. Resembles the adult male, but has a rufous cheek-stripe. Total length 11·0 inches, culmen 1·25, wing 5·4, tail 4·25, tarsus 1·0.

In the collection of Mr. Frank Nicholson I have seen a specimen obtained by Mr. H. O. Forbes at Blalana, Sumatra, upon the 29th of January, at an elevation of 3000 feet, "Sex?" upon label. This example has, in addition to the yellow malar stripe, the chin and upper throat varied with yellow, of the same colour as the cheek-stripe. It is apparently an adult bird, and I think there can be no doubt that it is a male. The descriptions are taken from a pair of birds kindly lent to me by Major Wardlaw Ramsay.

C. mystacale was first described by Count Salvadori (Ann.

Mus. Civ. Genov. xiv. p. 182, 1879), from specimens procured by Dr. Beccari at Mount Singalan, and is confined to the island of Sumatra, and, so far as we know, it is found in the western and central portion of the island, close to the Equator. Mr. Carl Bock procured it in the neigbourhood of Padang, and Mr. H. O. Forbes obtained it in the forest near Hoedjoeng, Blalauw.

3. CHRYSOPHLEGMA MENTALE.

Picus mentalis, Temm. Pl. Col. 384, ♂ (1826).

Picus gularis, Temm. MS.; Wagl. Syst. Av. *Picus,* sp. 89 (1827).

Gecinus mentalis (pt.), Gray, Gen. B. ii. p. 439 (1846), & iii. App. p. 21 (1849); id. List Picid. Brit. Mus. p. 77 (1868); id. Hand-l. B. ii. p. 192. no. 8686 (1870).

Venilia mentalis, Bp. Consp. Gen. Av. i. p. 128 (1850).

Brachylophus mentalis, Strickl. P. Z. S. 1841, p. 31; Bp. Consp. Volucr. Zygod. p. 10 (1854).

Venilia gularis, Reichenb. Handb. Scans. Picinæ, p. 358. no. 827, pl. dcxxviii. figs. 4180, 4181 (1854).

Picus mentalis (pt.), Sundev. Consp. Av. Picin. p. 58 (1866); Giebel, Thes. Orn. p. 167 (1876).

Chloropicus mentalis (pt.), Malh. Monogr. Picid. ii. p. 112, pl. lxxv. figs. 4, 5 (1862).

Adult male. Entire back, scapulars, rump, and upper tail-coverts uniform olive; wing-coverts brilliant Indian red; bastard-wing and primary-coverts blackish, margined externally with green; quills black, spotted with rufous-buff upon both webs, the outer webs of the primaries red at the base, this colour increasing upon each inner feather and upon the secondaries covering the entire web, some of the inner feathers being tipped and margined near the tip with olive, the apical half of the outer webs of the primaries uniform; shafts of quills brown; tail and tail-shafts black; nasal plumes dusky brown; forehead, crown, lores, space round the eye, and the ear-coverts dull olive, the occipital feathers brighter and varied with rufous; a few of the feathers on the sides of the occiput tipped with red; nape lemon-yellow, varied with rufous; hind neck olive, varied with rufous; chin, throat, and cheeks black, spotted with white, each feather with two minute spots at the tip; the feathers of the lower throat margined with white at the tip; posterior half of the face, sides of the neck, fore neck, and chest rich rufous; underparts and under tail-coverts uniform olive; under wing-coverts rufous, varied with blackish olive. Total length 11·0 inches, culmen 1·5, wing 5·6, tail 4·2, tarsus 0·9; toes (without claws)—outer anterior 0·8, outer posterior 0·65, inner anterior 0·6, inner posterior 0·35.

Adult female. Differs from the adult male in having the outer edge of the forehead and crown rich rufous, this colour forming a conspicuous stripe over the eye; cheeks and chin rich rufous, the middle of the throat alone being brownish black, each feather having two spots of white near the tip, the lower feathers of the throat similar to these, but having their tips rufous. Total length 11·0 inches, culmen 1·45, wing 5·6, tail. 4·2, tarsus 0·95.

Fledgling. In general coloration resembling the adult, but very much duller, especially on the head and underparts, the top of the head and the face being very dusky, almost black; the chief differences, however, being in the markings of the cheeks, chin, and throat, the cheeks having dull rufous striations, the chin and throat not having the spotted character of the adult, the feathers having more of a buffy white apical margin, duller upon the chin; lesser wing-coverts dull olive, spotted with red.

This bird being rare in collections, I give the chief points in which it differs from *C. squamicollis.* In the present species the chin and throat are spotted with white, not striated; the apical half of the outer webs of the primaries and also the apical portion of the secondaries are uniform; the rufous spots on the quills are very much smaller and less conspicuous, being, on the inner webs of the secondaries, small rounded spots, not bar-like and not crossing the whole of the web; the yellow nuchal crest is shorter and less brilliant. It is also larger than the Malaccan species. Malherbe's descriptions of the adult male and the adult female of his *C. mentale* are not taken from the Javan bird, his description of the young male is taken from a Javan example in the Leiden Museum, which I have seen. As regards Malherbe's representations of the present species in his 'Monograph' (pl. lxxv. figs. 4, 5), the male is not the Javan bird; the figure of the female is partly taken from *C. mentale*, and partly from the Malaccan bird; the side of the face is characteristic of the Javan species, but the throat has been altered to be in harmony with the author's views. Malherbe considered the birds having spotted throats to be the young, and those having the striped throat he regarded as the adult; and if the adult Javan birds at present in the Leiden Museum were in the collection when it was visited by that writer, he would have looked upon them as immature, and have figured as adult the striped-throated bird, which is another species.

C. mentale has a limited range, being confined to the Island of Java. My descriptions of the adult male and of the fledgling are taken from specimens in the Leiden Museum, that of the female being taken from an example in the British Museum.

4. CHYRSOPHLEGMA SQUAMICOLLLE.

Picus mentalis (non Temm.), Vig. Mem. Raffl. p. 668 (1830); Less. Compl. Buff. ix. p. 314 (1837).

Picus squamicollis, Less. Traité, p. 229 (1831).

Gecinus mentalis (pt.), Gray, Gen. B. ii. p. 439 (1846), iii. App. p. 21 (1849); id. List Picid. Brit. Mus. p. 77 (1868); id. Hand-l. B. ii. p. 192. no. 8686 (1870).

Gecinus mentalis (non Temm.), Blyth, Cat. B. Mus. As. Soc. p. 59. no. 269 (1849); Wall. Ann. & Mag. Nat. Hist. 2nd ser. xv. (1855).

Picus mentalis (pt.), Sundev. Consp. Av. Picin. p. 58 (1866); Giebel, Thes. Orn. p. 167 (1876).

Venilia mentalis (non Temm.), Reichenb. Handb. Scans. Picinæ, p. 358. no. 827, pl. dcxxviii. figs. 4178, 4179 (1854); Horsf. & Moore, Cat. B. Mus. E. I. Co. p. 665. no. 970 (1856–58); Moore, P. Z. S. 1859, p. 456.

Chrysophelgema mentalis (non Temm.), Jerd. B. Ind. i. p. 291 (1862); Hume, Str. F. 1874, p. 472; Blyth & Wald. B. Burm. p. 76. no. 115 (1875); Salvin, Cat. Strickl. Coll. p. 391 (1882).

Chloropicus mentalis (pt.), Malh. Monogr. Picid. ii. p. 112, pl. lxxv. figs. 4, 5 (1862).

Callolophus mentalis (non Temm.) Salvad. Ucc. Born. p. 49 (1874); Sharpe, Ibis, 1877, p. 9; Hume & Davison, Str. F. vi. p. 138 (1878); Hume, op. cit. 1879, pp. 52, 87; Sharpe, Ibis, 1879, p. 242; Salvad. Ann. Mus. Civ. Genov. xiv. p. 181 (1879); Oates, B. Brit. Burm. ii. p. 46 (1883); Guillemard, P. Z. S. 1885, p. 405.

Adult male. Above, including scapulars, rump and upper tail-coverts, uniform bright green, the rump-feathers tipped with yellow; wing-coverts bright Indian red, olive along the forearm; bastard-wing dusky brown, the feathers edged with green; primary-coverts dusky brown, edged externally with red and spotted upon the inner webs with pale rufous brown; quills brownish black, the primaries externally margined at the base with Indian red and barred with rufous; the outer webs of the secondaries almost entirely Indian red, spotted with rufous near the shafts; inner webs of all the quills having large rufous spots or bars; some of the innermost quill-feathers having the outer web and tip green; shafts black; tail, likewise the shafts, black; forehead, crown, and occipital crest olive; nuchal crest chrome-yellow, the bases of the upper feathers being rufous; upon the lower part of the hind neck an indication of a rufous collar; lores and side of the face, including ear-coverts, dusky olive; cheeks blackish brown, barred with dull white; chin and throat white, each feather having a broad central stripe of black; side of the neck, chest, and a band across the hind neck rufous; underparts and under tail-coverts olive, the latter more dusky; under wing-coverts pale rufous, washed with yellowish and having olive and blackish barring. Total length 10·75 inches, culmen 1·4, wing 5·3, tail 3·7, tarsus 0·9; toes (without claws)—outer anterior 0·8, outer posterior 0·65, inner anterior 0·55, inner posterior 0·4.

Mr. Davison gives the soft parts in the species as follows:—"Legs and feet green; claws plumbeous; upper mandible dull black, lower mandible and edges of upper mandible near nostril pale plumbeous; orbital skin dark green, at times pale green; irides deep red."

Immature male. Has the dusky malar stripe varied with rufous and spotted with dull white, the white on the feathers not presenting the barred appearance which distinguishes the fully adult male bird. Not having seen a very young male, I cannot say if it has the malar stripe rufous, as in the female, which the admixture of the rufous colour on the cheeks of the immature bird would suggest.

Adult female. Differs from the adult male in having the cheeks and chin rufous. Total length 10·5 inches, culmen 1·4, wing 5·3, tail 3·7, tarsus 0·95.

Young female (July). May be distinguished from the adult female by having the striations on the white chin and throat of a pale brownish dusky, and not deep black; the top of the head and the occiput dusky green; the ear-coverts pale brown, with the slightest tinge of green; the cheeks, sides of the neck, and the chest paler rufous, and the underparts of a duller green.

The present bird has long been common in collections, but no exact comparison of the Javan and Malaccan birds appears to have been made. Reichenbach perceived the differences; but by the names he applied to the two species he rather added to than cleared up the confusion which existed. I have come to the conclusion that the name *mentale* belongs only to the Javan form, and that the Malaccan bird must be called *C. squamicolle* (Lesson). The latter author, in his 'Traité d'Ornithologie,' p. 229, bestowed the name of *Picus squamicollis* upon a bird from an unknown locality; and it appears reasonable to suppose that his description was taken from a specimen in the Paris Museum (the only one in the collection at that date, and from an unknown locality). This specimen was received in exchange from Temminck in 1823; but it was apparently not the Javan species, the true *C. mentale,* but probably came from Borneo or Sumatra. No specimen of the true *C. mentale* was acquired by the Paris Museum until 1831, after the publication of Lesson's 'Traité.' Dr. Pucheran (Rev. et Mag. de Zool. 1853, p. 162) regarded as the type of *Picus squamicollis* the specimen in the Paris Museum received from Temminck in 1823, and in this I agree with Dr. Pucheran; but I think he erred in considering the bird to be nothing more than the female of *C. mentale* (Temm.), which it certainly is not.

The adoption of Lesson's name for the present species will probably be unlooked for by many ornithologists; but I consider that my reasons for accepting the title are valid, and I shall therefore give them as briefly as possible, and endeavour to reinstate a species which has not been recognized since the date of its discovery by any author except Reichenbach. Temminck described the Javan bird as *Picus mentalis*, and his MS. name of *gularis* had also reference to the same species. This synonym was adopted by Wagler for the Javan bird; and the latter author's description, although indefinite in some respects, bears evidence of having been taken from the true *C. mentale*; therefore Wagler's title is a mere synonym. In 1831 Lesson, in his 'Traité,' described a bird of this genus from an unknown locality, to which he gave the name of *Picus squamicollis*. It is the Malaccan bird, and, as I have already stated, I take it to be the type of the present species. Reichenbach, in his 'Handbuch (Scans. Picinæ,' p. 358), clearly points out the differences between the true *C. mentale* from Java and the present species, but unfortunately names the bird which has the feathers of the throat white with a black central stripe (*i. e.* the Malaccan species) *Venilia mentalis*, and the one having these feathers black with white spots at their extremities (*i. e.* the Javan species) *Venilia gularis*. If Lesson's title were to be rejected for the present species, that of Reichenbach, although he was fully aware of the value of the species, could not stand, as Temminck had already applied the same name to the Javan bird.

I am greatly indebted to Dr. Oustalet for having sent me particulars of all the specimens of *C. mentale* and also of the Malaccan species contained in the Paris Museum, and also for having compared them with drawings of both species which I sent to him; and I accept without hesitation Lesson's title of *squamicollis* for the specimen obtained by the Paris Museum from Temminck in the year 1823, which is undoubtedly the species of Malacca and Borneo.

The habitat of the present species is Southern Tenasserim, the Malayan Peninsula, Sumatra, and Borneo. In Tenasserim, according to Messrs. Hume and Davison, it is "confined to the extreme south of the province, and very rare there; probably only an occasional straggler." Mr. Davison procured it at Bankasoon; Stoliczka found it in the Province of Wellesley; and the Hume Collection contains Malayan examples from Klang, Salangore, Pulo Seban, Neealys, Chohong, Johore, Malacca, and Singapore Island, illustrating, as far as possible, the entire geographical range of the bird in the Malayan Peninsula. This species also formed part of the collection made in Sumatra by Sir Stamford Raffles, and Mr. Wallace procured it in the same island. Examples from Borneo are to be found in most museums. In the latter island it has been collected in Lumbidan and Brunei by the late Governor Ussher, and it has been recorded from the Lawas River by Mr. Treacher. Mr. Everett procured it at Bintulu. It has been obtained at Sarawak by the Marquis Doria and Dr. Beccari; and I have in my collection a specimen from Jambusan (*Dr. Platen*). On the north-eastern coast it has been found by Mr. Lempriere at Silam, and Dr. Guillemard also met with it at that place and at Sandakan.

5. CHRYSOPHLEGMA MINIATUM.

Picus miniatus, Forst. Ind. Zool. p. 14, pl. iv. (1781); Lath. Syn. i. pt. 2, p. 595 (1782); Gm. Syst. Nat. i. p. 432 (1788); Lath. Ind. Orn. p. 241 (1790); Penn. Ind. Zool. p. 39, pl. vi. (1790); Shaw, Gen. Zool. ix. p. 210, pl. xxxv. (1815); Horsf. Trans. Linn. Soc. xiii. p. 176 (1821); Lath. Hist. B. iii. p. 361 (1822); Gray & Hardw. Ill. Ind. Zool. i. pl. xxx. fig. 1 (1830–32); Less. Traité, p. 222 (1831).

Picus miniatus (pt.), Wagl. Syst. Av. *Picus,* sp. 98 (1827); Vig. Mem. Raffl. p. 669 (1830); Sundev. Consp. Av. Picin. p. 59 (1866); Giebel, Thes. Orn. p. 168 (1876).

Malacolophus (*Brachylophus*) *miniatus,* Swains. Classif. B. ii. p. 308 (1837).

Gecinus miniatus (pt.), Gray, Gen. B. ii. p. 439 (1846); id. List Picid. Brit. Mus. p. 75 (1868); id. Hand-l. B. ii. p. 191. no. 8682 (1870).

Chloropicos miniatus (pt.), Malh. N. Classif. Mém. Acad. Metz, 1848–49, p. 350.

Venilia miniatus (pt.), Bp. Consp. Gen. Av. i. p. 128 (1850); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 664 (1856–58).

Brachylophus miniatus, Strickl. P. Z. S. 1841, p. 31; Bp. (pt.) Consp. Volucr. Zygod. p. 10 (1854).

Venilia miniata (pt.), Reichenb. Handb. Scans. Picinæ, p. 358. no. 830, pl. dcxxix. figs. 4184–85 (1854).

Chloropicus miniatus (pt.), Malh. Monogr. Picid. ii. p. 116, pl. lxxvi. figs. 1, 2 (1862).

Adult male. Upper and middle back washed with bright Indian red upon a ground of dusky olive, barred and spotted with pale yellow; scapulars and wing-coverts Indian red; bastard-wing and primary-coverts blackish brown, red externally; quills blackish brown, the primaries having their outer webs margined with red at the base, this colour extending further up the web on each inner feather, the remaining part of the outer webs obliquely spotted with buff, the basal half of the inner webs transversely spotted with buffy white; outer webs of the secondaries red, the inner webs transversely spotted with buffy white on the basal half, the spots on the innermost feathers having a barred character; shafts of primaries pale brown, those of the secondaries blackish brown; lower back and rump washed with lemon-yellow on a ground of dusky olive, spotted and barred with white, the yellow being confined to the margin and tip of each feather; upper tail-coverts blackish brown spotted with white, some of the uppermost having a yellowish margin and the spots bar-like; tail brownish black; shafts black;

nasal plumes brown; forehead, crown, and occipital crest carmine-red, the bases of the feathers being buffy brown on the sinciput and greyer on the occiput; nuchal crest yellow, washed with red; hind neck like the back; lores brown, spotted with red; sides of the face and neck brownish buff, the feathers of the face tipped with pale red, those on the side of the neck faintly spotted with buffy white at the tip, and having an almost obsolete central spot of brown, the feathers on the lower side of the neck barred with brown and the greater part having a pink tinge; chin and throat buff, with a few paler spots and some almost obsolete spots of brown; fore neck and chest buff, whiter upon the under surface of the body, and the whole crossed by zigzag markings of blackish brown; under tail-coverts dusky brown, spotted and barred with dull buffy white; under wing-coverts olive-dusky, spotted and barred with white. Total length 9·0 inches, culmen 1·2, wing 5·2, tail 3·15, tarsus 1·0; toes (without claws)—outer anterior 0·83, outer posterior 0·8, inner anterior 0·58, inner posterior 0·35.

Adult female. Differs from the adult male in having the forehead, lores, face, the whole of the neck and the chest covered with minute rounded spots of blackish brown and buffy white. Total length 9·0 inches, culmen 1·07, wing 5·0, tail 3·1, tarsus 0·92.

Dr. Sclater (P. Z. S. 1863, p. 211) has pointed out the differences between the present species and *C. malaccense*, and blames Malherbe for having wrongly named the bird *Chloropicus miniatus*, which he represents in his Monograph, plate lxxvi. figs. 1, 2. I cannot entirely agree with Dr. Sclater; and I am of opinion that the male bird figured by Malherbe is true *Chrysophlegma miniatum*, and not *C. malaccense*. The red back shows this to be the case; and although in *C. miniatum* the nuchal crest is always more or less red, still I do not remember to have ever seen a single specimen in which there was not a small amount of yellow upon some of the feathers. The majority, however, of the nuchal feathers are red, the remainder being yellow washed with red, generally at the tips, and I have seen a specimen in which some of the feathers were red tipped with yellow. The yellow of the crest does not, however, assume the definite form represented in Malherbe's plate, which is misleading. The same author's figure of the female has neither the back of *C. miniatum* nor of *C. malaccense,* and is so unsatisfactory that one cannot with certainty say from which species it was taken.

C. miniatum is confined to the island of Java, whence the Leiden Museum contains numerous examples. In the British Museum there is a specimen of Mr. Wallace's from East Java, which in no way differs from examples procured in other parts of the island. This species is clearly separable from the allied one, *C. malaccense,* which is found in Southern Tenasserim, the Malayan Peninsula, Sumatra, and Borneo, and may be distinguished from the latter species by its red back and beautifully developed and longer red crest, the latter colour spreading on to the nuchal feathers and replacing the yellow. I think there can be no doubt that some of the specimens of *C. miniatum* in the Leiden Museum have been wrongly sexed; the birds with the spotted face are sometimes marked on the collectors' labels as males, and those with the face unspotted and washed with red are occasionally labelled as females. I have always considered that the reverse is the case, and this view is in accordance with that of Malherbe; and when we find it to be so in the allied species *C. malaccense,* according to such excellent collectors as Messrs. Davison, Darling, and Oates, I think there can be no reason to doubt that the sexual distinctions would correspond in *C. miniatum.*

6. CHRYSOPHLEGMA MALACCENSE.

Le Pic de Malacca, Sonn. Voy. Ind. ii. p. 211 (1782).

Malaccan Woodpecker, Lath. Syn. Suppl. p. iii (1787).

Picus malaccensis, Lath. Ind. Orn. i. p. 241 (1790); id. Hist. B. iii. p. 362 (1822); Drap. Dict. Class. Hist. Nat. xiii. p. 500 (1828); Blyth, J. A. S. B. xiv. p. 192 (1845).

Picus miniatus (non Forst.), Shaw & Nodd. Nat. Misc. xi. pl. ccccxiii. (1800).

Chrysonotus miniatus (non Forst.), Eyton, P. Z. S. 1839, p. 106.

Gecinus miniatus (pt.), Gray, Gen. B. ii. p. 439 (1846); id. List Picid. Brit. Mus. p. 75 (1868); id. Hand-l. B. ii. p. 191. no. 8682 (1870).

Chloropicos miniatus (pt.), Malh. N. Classif. Mém. Acad. Metz, 1848–49, p. 350.

Gecinus malaccensis, Blyth, Cat. B. Mus. As. Soc. p. 59 (1849).

Gecinus miniatus, Blyth, Cat. B. Mus. As. Soc. App. p. 336 (1849).

Venilia miniatus (pt.), Bp. Consp. Gen. Av. i. p. 128 (1850); Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 664 (1856–58).

Venilia miniata, Reichenb. Handb. Scans. Picinæ, p. 358. no. 830, pl. dcxxix. figs. 4184–85, ♂ ♀ (1854) (pt.); Moore, P. Z. S. 1859, p. 456.

Brachylophus miniatus (pt.), Bp. Consp. Volucr. Zygod. p. 10 (1854).

Chloropicus miniatus (pt.), Malh. Monogr. Picid. ii. p. 116, pl. lxxvi. figs. 1, 2 (1862).

Chrysophlegma miniata, Jerd. B. Ind. i. p. 291 (1862); Hume, Str. F. 1873, p. 450; id. op. cit. 1874, p. 472.

Venilia malaccensis, Sclat. P. Z. S. 1863, p. 211.

Chrysophlegma malaccensis, Wald. Ibis, 1871, p. 165; Hume, Str. F. 1875, p. 324; Salvin, Cat. Strickl. Coll. p. 392 (1882).

Callolophus malaccensis, Salvad. Ucc. Born. p. 50 (1874); Sharpe, P. Z. S. 1875, p. 103; id. Ibis, 1876, p. 35; Tweedd. op. cit. 1877, p. 289; Hume & Davison, Str. F. vi. pp. 140, 510 (1878); Hume, op. cit. 1879, p. 52; Sharpe, Ibis, 1879, p. 242; Salvad. Ann. Mus. Civ. Genov. xiv. p. 182 (1879); Oates, B. Brit. Burm. ii. p. 47 (1883).

Picus miniatus (pt.), Vigors, Mem. Raffl. p. 669 (1830); Sundev. Consp. Av. Picin. p. 59 (1866); Giebel, Thes. Orn. p. 168 (1876).

Adult male. Above green, with irregular yellowish cross markings, and sparingly spotted with blood-red; scapulars and wing-coverts blood-red; bastard-wing brown, spotted on the outer webs with buff; primary-coverts brown, externally margined with a redder tint; quills blackish brown, the outer webs of the primaries partially or entirely margined with blood-red and notched with buff, the inner webs spotted with the same; the secondaries having the outer webs blood-red, the inner webs notched and spotted with buff; shafts dark brown; rump and upper series of upper tail-coverts bright lemon-yellow, lower series of upper tail-coverts blackish brown, spotted with buff; tail and tail-shafts black; forehead, crown, and occipital crest blood-red inclining to pinky red, slightly dusky brown on the forehead; elongated nuchal crest yellow; lower hind neck green, barred with yellowish and spotted with blood-red; lores and side of the face rufous washed with red, the feathers having red tips; side of the neck clear bright red; from the chin to the chest inclusive pale rufous, the latter spotted with blackish brown and buffy white; entire underparts pale buff, crossed by zigzag markings of blackish brown, these being narrower on the abdomen; under tail-coverts pale buff, barred with blackish brown; under wing-coverts blackish brown, with large pale buff spots: "legs and feet dirty green; lower mandible pale bluish; upper mandible horny black; eyelids dirty green" (*W. Davison*). Total length 10·25 inches, culmen 1·1, wing 4·8, tail 2·7, tarsus 0·9; toes (without claws)—outer anterior 0·78, outer posterior 0·75, inner anterior 0·55, inner posterior 0·4.

Young male (May 13th). Differs from the adult male in having the upper parts dusky green, the upper portion of the back without the irregular transverse yellow markings, the feathers having dull yellowish tips; the yellow on the rump and upper tail-coverts paler; the red on the wings less brilliant; the forehead and crown dusky brown, the feathers having dusky tips; the whole of the face, neck, and chest dull buffy brown, the face having faint dusky transverse markings, the sides of the neck and the chest having these dusky markings more pronounced, the chin and throat being uniform; occipital crest duller red, and the nuchal crest pale yellow; underparts similar to the adult, but the dark zigzag markings less black, fewer and broader, and having a washed-out appearance.

Another young male (Klang, Salangore, May 15th), also in the Hume Collection, has the irregular transverse dusky markings extending on to the chin and throat, but they are very faint; the top of the head red, and the irregular yellow markings on the back showing clearly, and even in the nestling plumage the feathers of the forehead and crown are sometimes tipped with red. As the bird becomes older the red on the forehead and crown increases, and in a specimen obtained upon August 16th (Jahore, *W. Davison*) the red is beginning to appear on the cheeks. In this example the upper back is greener, the feathers with brighter yellow tips and having a spotted appearance. The length measurement of this specimen is 9·82 inches, and the soft parts are given as follows:—"Upper mandible black; lower mandible pale blue; iris brown; legs and feet pale bluish green, claws bluish horny" (*W. Davison*).

Nestling. Above dusky olive, the back having dull yellowish spots, the scapulars being tipped with dull lake-red; wing-coverts dull lake-red, dusky brown along the forearm; quills blackish brown, the primaries having the outer webs margined at the base with dull lake-red, and notched along nearly the whole length with brownish white; the inner webs spotted with brownish white; outer webs of the secondaries dull lake-red, the inner webs spotted or deeply notched with brownish white; shafts of primaries brown, those of the secondaries black; feathers of the rump tipped with lemon-yellow; upper tail-coverts greenish dusky, with a trace of lighter spotting; tail and tail-shafts black; forehead and crown dusky brown, the tips of the feathers being lake-red; the occipital feathers bright red and elongated; nuchal crest yellow; lores dusky brown; sides of the face and neck, likewise from the chin to the lower breast inclusive, dingy brown mottled with a lighter dingy rufous; remainder of underparts and under tail-coverts dusky, with large faint spots of dingy brownish white; under wing-coverts dusky brown, spotted with brownish white.

Adult female. Differs from the adult male in having the upper parts deeper green, and the cross markings less regular and not so yellow; the red upon the wings rather duller; the rump dull green with yellowish cross markings, and the feathers slightly tipped with lemon-yellow; forehead and crown more dingy, the former minutely spotted with buff or buffy white; lores, space round the eye, and cheeks blackish brown, spotted with buffy white; from the chin to the breast deeper rufous, the chin and throat being thickly spotted with blackish brown and buffy white, the remainder having wavy cross markings of blackish brown and a few spots of buffy white, the sides of the neck having a few spots of red; underparts lighter, the cross markings appearing darker: "legs and feet pale dirty green, claws horny green; lower mandible bluish white, upper mandible horny black; irides red; eyelids dark grey" (*W. Davison*). Total length 10·62 inches, culmen 1·1, wing 4·8, tail 2·6, tarsus 0·87.

Young female. The Hume Collection contains two young females, one from Kossoom, May 23rd (*J. Darling, Jun.*), the other from Nealys, near Malacca, October 14th (*W. Davison*). Neither of these are so young as the young male described, they are more rufous on the face, neck, and chest, but may easily be distinguished from the young of the opposite sex by the whitish spots on the forehead, lores, face, chin, and throat, these spots being partially edged with dusky. The specimen dated May 23rd has the underparts very similar to the adult bird, whereas the one obtained October 14th has the under surface of the body resembling that of the very young male, and is very probably a bird of a second brood.

The specific differences between this bird and *C. miniatum*, from Java, have been already pointed out by Dr. Sclater in the 'Proceedings of the Zoological Society' for 1863, p. 211, and I think there can be no doubt that the bird having the back and almost the entire nuchal crest red is confined to the island of Java. Lord Tweeddale (Ibis, 1877, p. 289) states that he possessed an example collected in East Java by Mr. Wallace, and marked a male, which he could not separate from true *C. malaccense*, and, further, that Sumatran examples collected by Mr. Buxton were considerably varied or washed with red on the back. All I can say is, that a male of *C. miniatum* from East Java, collected by Mr. Wallace, and forming part of the British Museum collection, is quite different from *C. malaccense*. It is possible that in the younger stages of plumages the Javan and the Malaccan birds may resemble each other; never having seen the young of *C. miniatum*, I cannot say, but in the fully adult dress the Malaccan bird never assumes the red back, and has at most a few spots or blotches of this colour. I have examined a very large series of *C. malaccense* in the British Museum (comprising the Hume Collection) as well as those in my own cabinet, and I have not found a single specimen from any locality that could be mistaken for the Javan bird, neither have I seen any examples of *C. miniatum* from Java that could not be readily separated from the Malaccan species. *C. malaccense* is found in Southern Tenasserim, throughout the Malayan Peninsula, and also in Sumatra, Bangka, and Borneo. In Tenasserim, according to Messrs. Hume and Davison, it is confined to the southern portions of the province and is rather common. Mr. Davison, in his note on this species (Str. F. vi. p. 141, 1878), says:—"A bird of the evergreen forests, not occurring in open country, but, unlike the other *Callolophi*, rather partial to mangrove swamps, in which I have shot them. These, too, I never saw on the ground. It has none of the peculiar habits of *C. puniceus*, and its note rather resembles that of the *Gecini*." Tavoy is the most northern locality whence the latter collector obtained specimens. Mr. E. C. Buxton procured it at Lampong in South-east Sumatra; and from the same island, as well as from Bangka, there are examples in the Leiden Museum. In the British Museum there are two specimens from Sumatra, one having been collected by Raffles and formerly in the Indian Museum, the other having been obtained in the island by Mr. Wallace. In Borneo, Governor Ussher found this species in Lumbidan, Brunei, and on Moara Island, and it was procured by Mr. Treacher on the Lawas River. Mr. Everett forwarded specimens from Sibu and Matu, and at Sarawak it was obtained by the Marquis Doria and Dr. Beccari.

XXXII.—*Additional Notes on the Ornithology of Transvaal.* By Thomas Ayres. Communicated by John Henry Gurney.

[Continued from 'The Ibis,' 1885, p. 351.]

[In the following pages the species which had not been previously recorded from Transvaal by Mr. Ayres are numbered consecutively to those previously collected by him in that country.—J. H. G.]

Circaëtus pectoralis, Smith. Black-chested Harrier Eagle.

In our winter of 1884 this very handsome Eagle was much more plentiful about Potchefstroom than usual; the following year there were comparatively few about. Specimens sent.

A. Male, adult, Potchefstroom, 4th June, 1884.

B. Female, adult, Potchefstroom, 25th June, 1884 (very small for a female).

C. Female, adult, Potchefstroom, 16th July, 1884. Crop and stomach contained two large toads, both swallowed whole.

D. Female, adult, Potchefstroom, 20th July, 1884. Crop and stomach contained toads.

[I have taken the following measurements of these specimens :—

	Wing. in.	Tarsus. in.	Middle toe *s. u.* in.
A. ♂	22·00	3·60	1·80
B. ♀	21·60	3·60	2·20
C. ♀	22·20	3·80	2·10
D. ♀	22·50	3·60	2·10

—J. H. G.]

Circaëtus cinereus, Vieill. Cinereous Harrier Eagle.

Female, Pilaus Berg, Rustenburg district, 10th July, 1883. Iris yellow; bill black; tarsi and feet greenish white.

I have only met with this species in the warmer districts or bush-veldt.

[In this specimen the feathers of the under surface of the body have no white bases; I have taken from it the following measurements :—

Wing.	Tarsus.	Middle toe *s.u.*
in.	in.	in.
22·60	3·90	2·85.

—J. H. G.]

Melierax gabar (Daud.). Gabar Hawk.

Male, adult, Limpopo river, 26th May, 1884. Iris and tarsus red.

This bird was very busy amongst the rough-chambered nests of the Red-billed Weaver, *Textor erythrorhynchus*, and was seen to enter six in succession, no doubt in quest of young birds; but his chance of success would have been very much greater had he made his search three months later.

Accipiter minullus (Daud.). Little African Sparrow-hawk.

Female, adult, Limpopo river, 11th August, 1885.

This little Hawk was chasing with wonderful rapidity and power of twisting and turning, amongst the branches of some high trees, a small Finch which had the greatest difficulty in escaping, and probably would not have done so had not the Hawk caught sight of me as I was standing motionless and watching the chase, when it immediately gave up the pursuit, but settled within easy range of my gun.

377. Nisaetus pennatus (Gmel.). Booted Eagle.

Female, Rustenburg, 12th February 1884. Total length in the flesh 19¾ inches. Iris hazel; bill slate-colour, but with the base and gape yellow; feet yellow. Was shot while feeding on a hedgehog which it had apparently just killed.

[The specimen sent was in the pale phase of plumage, very similar to a male from France and a female from Morocco, both preserved in the Norwich Museum. I find myself unable to recognize the several allied subspecies into which *N. pennatus* is by some ornithologists subdivided.—J. H. G.]

Aquila rapax (Temm.). Tawny Eagle.

Male, adult, Limpopo river, near its junction with the Pongola river, 27th July, 1884.

Female, adult, Rustenburg, 17th July, 1884.

The last-named specimen had just eaten a chicken when it was shot.

Buteo desertorum (Daud.). Desert Buzzard.

Male, adult, 4th January, 1885.

Female, adult, 12th January, 1885.

I found several of these Buzzards amongst some mimosas on the Moi river, about twenty-five miles above Potchefstroom, and succeeded in obtaining two of them.

Milvus ægyptius (Gmel.). Yellow-billed Kite.

Female, immature, Marico river, 10th March, 1884.

About Potchefstroom I have for several years past seen but few of these Kites.

Caprimulgus europæus, Linn. European Nightjar.

Male, Potchefstroom, 12th February, 1885.

So far as my experience goes, this species is always scarce throughout Transvaal.

Coracias caudata, Vieill. Lilac-breasted Roller.

In our winter of 1885 I found this handsome Roller fairly plentiful on the upper portions of the river Limpopo above Vlei Poort, but they were wonderfully shy and so difficult to obtain that in two months I got but two.

Coracias nævia, Daud. White-naped Roller.

This species is occasionally to be met with either solitary or in pairs on the banks of the river Limpopo.

Merops bullockoides, Smith. White-fronted Bee-eater.

A few of these Bee-eaters are to be found during our winter on the river Limpopo, attracting one's attention by their loud and rather harsh notes.

Saxicola monticola, Vieill. Mountain Wheatear.

This species is widely distributed, and apparently throughout the country, being found here and there in suitable localities; buildings suit it well, and were it undisturbed it would soon become common in Potchefstroom.

[The many variations of plumage to which this Wheatear is liable may make it desirable to append the following descriptions of two specimens now sent by Mr. Ayres.

Male, immature, Potchefstroom, 6th January, 1885. Entire upper and under surfaces blackish brown (but brownest on the abdomen), excepting, however, the shoulder-patch and upper tail-coverts, these are white, but the feathers composing the former have their bases and shafts black; the tail in this specimen presents the following peculiarities—one rectrice of the central pair is black throughout, the other is black except the basal moiety of the exterior web, which is white, the remaining rectrices are white, but tipped, more or less extensively, with black.

Male, Potchefstroom, 12th January, 1885. In this specimen the plumage is black above and below, with the following exceptions:—The crown of the head is brownish grey, interspersed with a very few apparently newer white feathers; the shoulder-patch resembles that of the preceding specimen, but with the white more extended; a few unmoulted feathers on the upper surface are dark brown, the newer adjoining feathers being black; the tail, which is in process of moult, has the exterior pair of rectrices old and entirely white, the other rectrices, which are only partially developed, being black, but with white bases to some of the lateral ones; the upper tail-coverts and the tips of some feathers of the under tail-coverts are white.—J.H.G.]

SAXICOLA GALTONI (Strickl.). Galton's Wheatear.

This species is sparsely distributed on the Upper Limpopo river, and also amongst the mimosas in the Potchefstroom district.

PHYLLOSCOPUS TROCHILUS (Linn.). European Willow warbler.

Male, Potchefstroom, 10th January, 1885.

This species migrates every year to Transvaal during our summer months.

ACROCEPHALUS BÆTICATUS (Vieill.). South-African Reed-Warbler.

This species leaves Transvaal in April, and appears again with other migrants in our early spring. I am more in the swamps and amongst the reeds in our winter than in summer, but have never met with one of these Warblers in winter, either amongst sedges, reeds, or hedgerows, where in summer they are plentiful; neither is it found in winter in the more northern and warmer districts of Transvaal. The nests of this species vary a good deal in size and appearance, some in fact look as if they had been added to year by year, though this could scarcely be so.

CINNYRIS MARIQUENSIS (Smith). Southern Bifasciated Sun-bird.

These Sun-birds are found very sparsely on the Limpopo river during our winter months, feeding amongst the aloes which grow plentifully on the dry stony ridges; the males frequently fight and chase each other about with much vigour, although it is not the breeding-season.

HIRUNDO RUSTICA, Linn. Chimney Swallow.

Male and female, Potchefstroom, 12th January, 1885.

I found these Swallows, mostly young birds, congregating on the mimosas in company with *H. cucullata.*

[Both specimens sent appear to be birds of the previous spring, in course of change into adult dress.—J. H. G.]

MUSCICAPA GRISOLA, Linn. Spotted Flycatcher.

Potchefstroom, 12th January, 1885.

The Spotted Flycatcher is a regular summer migrant to Potchefstroom, though by no means in great numbers.

PACHYPRORA MOLITOR (Hahn & Küst.). White-flanked Flycatcher.

This is a very scarce species on the river Limpopo; I saw but two, both solitary, during the two winter months which I spent in that locality.

[Mr. Ayres has sent a specimen, evidently a male, and so marked by him, in which both ends of the pectoral band are rufous, and with a slight rufous tinge on the centre of the otherwise white throat; these peculiarities are probably the remains of immature plumage resembling the dress of the adult female. A similar stage of plumage has been recorded by Mr. Sharpe in the young males of two allied species, *Platystira cyanea* and *Pachyprora senegalensis* (*vide* Ibis, 1873, pp. 158 & 164).—J. H. G.]

LANIUS COLLARIS, Linn. Fiskal Shrike.

Female, Potchefstroom, 26th April, 1884. Stomach contained grasshoppers.

This Shrike, and also *Laniarius silens*, is sparsely distributed amongst the mimosa bushes growing on the ridges of the Mooi river valley in the Potchefstroom district.

ENNEOCTONUS COLLURIO (Linn.). European Red-backed Shrike.

Males, immature, Potchefstroom, 6th, 10th, and 16th January, 1885.

The Red-backed Shrike is found in the same localities as the two species last mentioned, but is perhaps sometimes more plentiful.

[In all three of the specimens sent the assumption of the adult dress has just commenced.—J. H. G.]

TELEPHONUS SENEGALUS (Linn.). Senegal Tchagra Shrike.

These Shrikes are by no means uncommon on the river Limpopo, and one or two may often be seen amongst a company of small birds which frequently collect together without any apparent cause. [In previous volumes of 'The Ibis' I have erroneously applied the specific name *erythropterus* to Natal and Transvaal examples of this species.—J. H. G.]

LANIARIUS ATROCOCCINEUS (Burch.). Crimson-breasted Bush Shrike.

These birds are tolerably common on the Upper Limpopo, amongst the thorny and dense mimosas which bear the name of cat-thorns, where it is not always an easy matter to follow them or even to get a bird that has been shot.

CRATEROPUS BICOLOR, Jard. Pied Babbling Thrush.

On the Upper Limpopo, above Vlei Poort, I saw several flocks of this species in June and July 1885, and almost always found a single bird, or a pair, of *Laniarius coccineus* in their company, and hunting with them on the ground for their insect diet.

378. LAMPROCOLIUS SYCOBIUS, Peters. Peters's Glossy Thrush.

Male, river Limpopo, 3rd July, 1884.

This beautiful Grakle is plentiful during our winter about some parts of the river Limpopo.

LAMPROTORNIS AUSTRALIS, Smith. Burchell's Glossy Thrush.

Burchell's Glossy Thrush is the commonest of the Grakles on the river Limpopo, and next to it, in point of numbers, comes *Lamprocolius phœnicopterus*; both species are very shy and difficult to get within range of, but both may often be seen feeding on the ground in company, frequently also together with Francolins and other birds.

Burchell's Glossy Thrush is very handsome when in good plumage, and is furnished with ample wings and tail; its flight is much more heavy than that of most of the other Grakles.

[On comparing four males of *Lamprotornis australis* with four females, all obtained by Mr. Ayres near the river Limpopo, I observe that the males are considerably the larger; taking the largest specimen of each sex, I find the following differences of size:—

	Wing. in.	Tarsus. in.	Tail. in.
Male	7·50	1·85	6·70
Female	6·75	1·70	5·75

—J. H. G.]

379. PHOLIDAUGES LEUCOGASTER (Gmel.). White-bellied Glossy Thrush.

[This species, as well as the nearly allied *P. verreauxi* recorded in 'The Ibis,' 1884, p. 228, occurs in the Rustenburg district; Mr. Ayres has sent me an adult male of each race from thence, both shot in December 1883.

P. verreauxi ranges as far north as Mombasa, from whence I received an adult male, which was also recorded in 'The Ibis' for 1881, p. 127.—J. H. G.]

TOCKUS ERYTHRORHYNCHUS (Gmel.). African Red-billed Hornbill.

These Hornbills are plentiful about the river Limpopo, both singly and in small companies; in our winter months, when fruits are scarce, they may be often found feeding on certain bulbous roots which grow plentifully in patches along the banks of the river, and of which the Francolins are also particularly fond. It is not an uncommon occurrence to flush a lot of Francolins, Jardines, Babbling-Thrushes, Spreos, and these Hornbills all together; they evidently feed together very amicably on much the same diet, though the Spreos, no doubt, look out for insects more than for bulbs.

[Mr. Ayres has sent five specimens of this Hornbill, obtained by him in the neighbourhood of the river Limpopo, and from these I have taken the following measurements:—

	Culmen. in.	Wing. in.	Tail. in.
Male, shot 9th July	2·90	7·90	8·30
Female, shot 6th July	2·55	7·20	8·20
Female, shot 12th June....	2·50	7·05	7·45
Female, shot 9th July	2·45	7·25	7·30
Female, shot 9th July	2·10	7·15	7·30

In all these specimens the ear-coverts are white, but with the central portion of each feather slaty black, which causes a general effect of dark grey; the feathers above the ear-coverts are similarly marked, but with the white in each feather much more predominant.—J. H. G.]

ESTRELDA ERYTHRONOTA (Vieill.). Black-cheeked Waxbill.

Male, Vlei Poort, river Limpopo, 5th August, 1885.

This is not a common species on the banks of the Limpopo, but when found it is generally in small companies amongst thorn-bush, often alighting amongst the grass for the small seeds abundantly strewn upon the ground.

Lagonosticta rubricata (Licht.). South-African Ruddy Waxbill.

Male, river Limpopo, 11th July, 1885.

Pyromelana taha (Smith). Taha Bishop-bird.

This little Bishop-bird has now (1886) almost disappeared from the neighbourhood of Potchefstroom; why, I know not.

Pytelia melba (Linn.). Southern Red-faced Finch.

These beautiful little birds affect the dense thorn-bush in preference to more open places; they are generally tame and easily got when found; one scarcely ever finds more than a pair together.

Hyphanturgus olivaceus, Hahn. Cape Weaver-bird.

About Potchefstroom the birds of this species are much brighter in plumage this season (1886) than I have ever noticed them previously.

Fringillaria tahapisi (Smith). Rock Bunting.

This species frequents the rough, rocky, scrubby ranges on the upper parts of the Mooi river, where it is not uncommon.

[Judging from dissected specimens sent by Mr. Ayres, it would seem that the females are brown on those parts of the head which in the adult males are black.—J. H. G.]

Mirafra nævia (Strickl.). Dark-lined Lark.

These Larks are rather common amongst the thorn-trees on the banks of the Limpopo, where they occur either singly or in pairs. When disturbed they usually settle on the top of some low thorn, and remain till the cause of alarm has disappeared, when they return to the ground in search of seeds and insects.

Mirafra nigricans (Sund.). Wahlberg's Lark.

Male, shot 10th January, 1885. Iris fine hazel-brown; bill dusky brown, with the under mandible bluish, the commissure and gape yellowish; tarsi and feet ashy white.

This is the second specimen of *M. nigricans* which I have met with. I found it amongst the scrubby bush on a rocky range of hills, some couple of miles from the banks of the Mooi river and about twenty from the sources of that stream. My attention was attracted to the bird by its large size, dipping flight, and Pipit-like appearance.

[This specimen, like the previous one obtained by Mr. Ayres and recorded in 'The Ibis,' 1884, p. 231, appears to be partly in immature plumage; and in the present instance the assumption of the adult dress seems to have made but little progress. Both specimens were killed on 10th January, the first in 1882, the second in 1885.—J. H. G.]

Chrysococcyx cupreus (Bodd.). Didric Cuckoo.

During our present summer months (1886) these Cuckoos are particularly scarce, although in 1885 they were more plentiful than had ever been known before.

Coccystes glandarius (Linn.). Great Spotted Cuckoo.

A male specimen was shot at Potchefstroom on 8th February, 1886, and brought to me in the flesh; but its possessor did not wish to part with it. The stomach of this bird contained a quantity of beetles, principally of a species of *Cetonia*, of moderate size.

This Cuckoo is one of our rarest visitants, though in the Orange Free State my friend, Dr. Symonds of Kroonstad, has killed several.

Campethera bennetti (Smith). Bennett's Woodpecker.

This specimen fell, when shot, from the top of a tree, with a broken wing and at least ten yards from the stem, but hopped very nimbly to the trunk, and before I could run up was out of reach and climbing so rapidly that I was obliged to fire again to secure it. These Woodpeckers are wonderfully quick climbers and are always scarce here.

Pœocephalus meyeri (Rüpp.). Meyer's Parrot.

I found a few pairs of these Parrots along the banks of the Limpopo during our winter months.

Turnix lepurana (Smith). Kurrichane Hemipode.

This is an exceedingly scarce Quail in the Potchefstroom district and, I think, more so than was the case in former years. I never remember to have found more than two together.

Pterocles bicinctus, Temm. Double-banded Sandgrouse.

Male and female found breeding, 27th May, 1884, near the river Limpopo, where my brother met with this species and also *P. namaqua* plentifully, and found them frequenting certain "pans" for their evening drink.

Pternistes swainsoni (Smith). Swainson's Francolin.

Male and female, river Limpopo, August 1885.

This species is abundant on the Limpopo, and is in the habit of congregating in numbers.

Francolinus natalensis, Smith. Natal Francolin.

Male, river Limpopo, 15th July, 1885.

This Francolin, called by the Boers "Namaqua Pheasant," is fairly common on the Limpopo, where it frequents the same localities as the preceding species. It is seldom that more than two or three are to be found together.

Francolinus pileatus. Pileated Francolin.

Female, river Limpopo, 4th August, 1885.

This species is much scarcer than either of the two Francolins just mentioned, though it is found in the same localities. It does not congregate like *Pternistes swainsoni.*

Francolinus gariepensis, Smith. Orange-river Francolin.

Male, Potchefstroom, 17th April, 1885.

Male, river Limpopo, 26th July, 1885.

Male, river Limpopo, 6th August, 1885.

Each of the above specimens gave a wing-measurement of 6¾ inches, and a total length in the flesh of 14 inches.

According to my experience, this is a very scarce Francolin; but I twice found it in covies amongst rocky hills on the banks of the river Limpopo. It is a fine heavy bird and excellent eating; the Boers call it the "Mountain-Partridge."

Francolinus subtorquatus, Smith. Coqui Francolin.

This is also a decidedly scarce species on the river Limpopo.

Eupodotis ruficrista (Smith). Red-crested Bustard.

Male and female, river Limpopo, 20th July, 1885.

This Bustard is somewhat scarce about the Limpopo river, and is not always easily found, though two or three are generally together. Besides its monotonous cry of *goo, goo,* it also whistles a short song, which any one unacquainted with this habit would take for the notes of some small bush-bird, such as a Shrike or Thrush.

Crex egregia (Peters). Greater African Crake.

Potchefstroom, 25th February, 1885.

This Crake continues to be a scarce species.

Totanus glareola, Linn. Wood Sandpiper.

Male, Potchefstroom, 8th December, 1883.

Gallinago major (Gmel.). Solitary Snipe.

Male, Potchefstroom, 6th April, 1885. Weight 8 oz.

380. Ardea melanocephala, Vig. & Childr. Black-necked Heron.

Male, Potchefstroom, 20th June, 1884. Field-rats and locusts in the stomach.

Male, adult, Potchefstroom, 22nd July, 1884. Total length in the flesh 36½ inches. Iris tawny yellow, with an outer ring of dark umber; bill dusky brown, but pale on the under mandible; bare skin about the base of the bill and the eye fulvescent whitish; bare portions of the tibiæ, tarsi, and feet black.

The Black-necked Heron is by no means uncommon about Potchefstroom during our winter months, and is generally to be found feeding on the ploughed lands, where it is not unusual to see three or four together.

ARDEA PURPUREA, Linn. Purple Heron.

Female, adult, Potchefstroom, 7th June, 1884. Stomach contained small perch.

These Herons are still tolerably numerous about the swamps of the Potchefstroom district, though their numbers are gradually decreasing, owing, no doubt, to the increase of shooting and to the reed-beds where they breed being disturbed by the cutting of the reeds for thatching.

ARDEA RUFIVENTRIS, Sund. Rufous-bellied Heron.

One of these Herons was shot by my brother on the river Limpopo, at its junction with the river Matlabas.

BUTORIDES ATRICAPILLA (Afzel.). African Black-headed Heron.

Male, immature, river Hex, Rustenburg district, 8th December, 1883.

This species is not found in the Potchefstroom district, but is not uncommon here and there in certain localities in the warmer parts of Transvaal.

[As neither edition of Mr. Layard's work describes the immature plumage of this Heron, it may be well to mention that it differs from the adult dress in the presence of a triangular spot of buffy white on each feather of the wing-coverts except those of the least coverts, where the corresponding spots are brown and are also smaller; the scapulars are spotted like the greater coverts, and the interscapulary feathers are marked with spots resembling those on the lesser coverts, but not so dark; the sides of the head are streaked alternately with black and brown, and a few minute brown streaks are interspersed amongst the black feathers of the crown; the whole under surface of the body differs from that of the adult bird in being variegated with alternate longitudinal striations of blackish slate-colour and buffy white.—J. H. G.]

ARDETTA PODICEPS, Bon. Rufous-necked Little Bittern.

Female, adult, Potchefstroom, July 1884.

[In 'The Ibis' for 1878, p. 300, I expressed an opinion that an immature Little Bittern, sent by Mr. Ayres from

Potchefstroom, was referable to the northern *A. minuta*; but having recently reexamined this specimen, and compared it with numerous examples both of *A. minuta* and of *A. podiceps*, I am disposed now to refer it to the latter species, and to believe that *A. minuta* has not been satisfactorily identified as a native of South Africa. The two species (or rather subspecies) are, in fact, very closely allied, and, when in immature plumage and not sexed, cannot always, as it seems to me, be discriminated with certainty.

It may perhaps be useful to record the following memoranda which I have noted with reference to these two races of Little Bitterns:—The adult males of *A. podiceps* have the sides of the head and also the sides and back of the neck of a vinous brown, with more or less of a rufous tinge, whilst the corresponding parts in the adult males of *A. minuta* are of a somewhat pale fawn-colour, which is occasionally suffused with a very slight tinge of grey. The adult females of both species have the sides and back of the neck of a rufous brown, but the rufous tint is decidedly deeper and richer in the females of *A. podiceps* than in those of *A. minuta*, and both in the females and immature birds there is a general tendency in the southern race to exhibit a slightly deeper tint on the brown portions of the plumage than is usual in the more northern species. Except as above mentioned, I do not find that the two races differ in coloration; but the average dimensions of specimens of *A. minuta* are slightly larger than those of *A. podiceps*, the measurements of male birds of both species being usually a little in excess of those of the females, which makes it needful to compare individuals of the same sex in discriminating the two races.

The following measurements (in inches and decimals) have been taken from specimens in the collections of my son, Mr. J. H. Gurney, Jun., and myself, and from others kindly lent me by Canon Tristram, Mr. Dresser, and Mr. Seebohm; the examples of *A. podiceps* are all from Transvaal, except one adult male in my collection from the Gaboon, which is the most northern example of the southern race with which I am acquainted.

Ardetta podiceps.

Males.

	Wing. in.	Tarsus. in.	Middle toe *s. u.* in.	Bill from forehead. in.
Adult, R. Gaboon	5·40	1·60	1·60	2·00
Adult, Transvaal	5·45	1·60	1·65	1·90
Adult, Transvaal	5·65	1·65	1·50	1·95
Nearly adult, Transvaal	5·20	1·60	1·40	1·90
Immature in change, Transvaal	5·55	1·60	1·50	2·05
Adult, Transvaal	5·60	1·70	1·65	1·90

Females.

	Wing. in.	Tarsus. in.	Middle toe *s. u.* in.	Bill from forehead. in.
Adult, Transvaal	5·55	1·60	1·60	1·90
Adult, Transvaal	5·05	1·50	1·50	1·90
Nearly adult, Transvaal	5·05	1·50	1·45	1·90
Immature, Transvaal	5·10	1·60	1·60	1·85
Immature, Transvaal	5·20	1·60	1·55	1·70
Adult, Transvaal	5·00	1·60	1·55	1·80

Ardetta minuta.

Males.

	Wing. in.	Tarsus. in.	Middle toe *s. u.* in.	Bill from forehead. in.
Norfolk, adult	6·15	....	1·50	1·90
Holland, immature	6·00	1·65	1·60	1·75
France, adult	6·05	1·60	1·55	1·90
Malta, adult	6·20	1·60	1·60	1·95
Malta, adult	6·10	1·60	1·65	1·90
Tunis, adult	5·85	1·70	1·60	1·90
Egypt, adult	6·05	1·80	1·60	2·00
Syria, immature	6·00	1·70	1·65	1·90
Turkestan, adult	6·20	1·85	1·65	1·95

Females.

	Wing. in.	Tarsus. in.	Middle toe *s. u.* in.	Bill from forehead. in.
Norfolk, adult	5·70	....	1·40	1·80
Sussex, immature	5·55	1·65	1·45	1·90
Italy, adult	5·85	1·70	1·60	
Algeria, adult	5·95	1·75	1·60	2·00
Algeria, adult	5·55	1·60	1·50	1·90
Egypt, nearly adult	5·90	1·60	1·40	1·80
Transcaucasia, nearly adult	5·50	1·60	1·50	1·90

J. H. G.]

381. Ciconia abdimii, Licht. White-bellied Stork.

Female, January 8th, 1885. Iris light tawny brown; bill reddish at the tip, greenish at the base; bare skin round the eye and about the chin red; feet and front part of the tarsi, also the uncovered part of the tibiæ, dusky brown.

Another female, killed the same day, differed in having the entire tarsi a dingy brick-red and the bare skin in front of the ear bluish.

I killed the birds now sent about thirty miles from Potchefstroom, near the Mooi river. These Storks are often to be seen in various parts of the Potchefstroom district in the rainy season, *i. e.* during our summer months. They are always in companies, though I have not seen them here in the vast numbers sometimes to be found in other parts of South Africa.

382. Ciconia nigra, Linn. Black Stork.

Male, Potchefstroom, June 12th, 1884. Bill and bare skin round the eye bright dark crimson; feet, tarsi, and bare part of tibiæ very bright scarlet. Stomach contained small perch and crabs.

This very handsome Stork, the first of the species that I have ever had, was shot just outside the town of Potchefstroom in a swamp where many water-birds are often to be found. It was a solitary specimen.

383. Mycteria senegalensis, Shaw. African Jabiru.

Female, Rustenburg district, 2nd April, 1883.

This is a rare species with us. The specimen sent was shot near Rustenburg. I do not remember to have ever seen it in the Potchefstroom district.

Nettapus auritus (Bodd.). African Dwarf Goose.

The specimen sent is one of two that were observed in a swamp about a mile from the town of Potchefstroom. This species is of very rare occurrence here, but, being much less shy than most of the water-fowl, it is comparatively easy to shoot it.

384. [Baza verreauxi (Lafr.). Verreaux's Baza.

This species was obtained, not unfrequently, by Mr. Ayres in Natal; but as he has not recorded it from Transvaal, I may take this opportunity of mentioning that an adult specimen sent from Transvaal to Mr. Whitely, of Woolwich, has lately been added to the Norwich Museum.

This, however, is not the most northern locality in which this species is found. There is, in the Norwich Museum, an adult example from the district of the Zambesi; and Captain Shelley possesses another obtained at Rabbai, near Mombasa, as recorded by him in the P. Z. S. 1881, p. 562.

I have examined several adults of this species, and in all of them I have observed a peculiarity which is not noticed in Mr. Sharpe's description of this Hawk, viz. a patch of dark rufous feathers in the centre of the upper part of the nape, of a somewhat square shape, and measuring from an inch to an inch and a half in vertical, and the same in transverse diameter.

I have only been able to examine three adults of the allied African species, *B. cuculoides*, in all of which there was merely an extremely slight trace of rufous on the nape, in place of the conspicuous patch exhibited by the adults of *B. verreauxi*. I may add that there appears to be a noteworthy difference in the colouring of the soft parts of these two nearly allied species. Mr. Ayres, referring to an adult female of *B. verreauxi* in 'The Ibis' for 1864, p. 356, describes the iris and cere as "light yellow" and the tarsi and feet as "yellow;" whilst Mr. J. Büttikofer states that, in a male of *B. cuculoides* obtained by him in Liberia, the iris was "red" and the "cere and feet orange" (*vide* 'Notes from the Leyden Museum,' vol. vii. p. 156).

The most striking distinction between the two African species of *Baza* is, however, that of the colouring of the under wing-coverts described by Mr. Sharpe in the British Museum Catalogue, vol. i. p. 351.—J. H. G.]

[I am desirous to take this opportunity of correcting an error which I made in 'The Ibis,' 1885, p. 349. I there referred to certain measurements of *Herodias intermedia* as "given by Mr. Sharpe;" but I ought to have said "given by Mr. Ayres."—J. H. G.]

XXXIII.—*Note on Kiener's Hawk-eagle.* By Samuel Bligh. (Communicated by John Henry Gurney.)

[As *Lophotriorchis kieneri* is one of the rarer of the eastern Hawk-eagles, the following particulars extracted from a letter received from my friend Mr. Samuel Bligh are, I think, worthy of record.—J. H. G.]

"I spent the month of February at Kotmalie (Ceylon) with my friend Mr. Master, on whose estate, just twelve years ago, I shot an adult male of *Lophotriorchis kieneri,* the first ever recorded as having been obtained in Ceylon.

"For two or three months previous to my visit, Mr. Master had often written to me that he was much troubled by an Eagle which, two or three times a week, would play havoc amongst his Pigeons, rarely missing a week in coming and in securing a Pigeon.

"Mr. Master had shot at the Eagle, but had failed to do more than frighten it.

"The day after I arrived it put in an appearance, and the poor Pigeons, a flock of sixty or seventy, seemed quite bewildered with the Eagle circling above them and waiting on them, till they were fairly terrified, when it would make a heavy awkward stoop and clutch the nearest Pigeon; it did not come within fair gun-shot, but I fired to save the Pigeon, and distinctly saw that the Eagle was hit.

"Three days later it was there again; I saw that it was gaining elevation for a stoop, waited, and the Pigeons keeping low this time, I dropped it as it was nearing the flock, and it fell almost at my feet quite dead. It proved to be an adult female of *L. kieneri*; very like the male which I shot twelve years before, but larger, weighing 2¼ lbs.* I found that it was the same bird that I had shot at two days before, as fresh wounds were plain upon the legs, and on skinning it I found that a thigh-bone had also been hurt long ago, but was well healed; its crop contained the fresh remains of a *Palumbus torringtoniæ.*"

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* [The male previously obtained by Mr. Bligh weighed 1¾ lb.—J. H. G.]

XXXIV.—*On the Claws and Spurs of Birds' Wings.*

By P. L. Sclater, M.A., Ph.D., F.R.S.

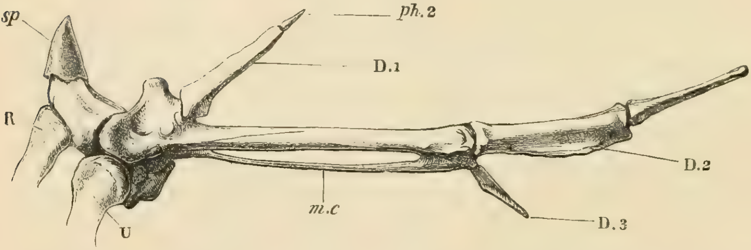
[Continued from p. 151.]

3. The Spur of the Spur-winged Goose (*Plectropterus gambensis*).

In *Plectropterus gambensis* we find a very different arrangement prevailing from what is met with in *Chauna* (above, p. 150). The single spur (*Sp*) is placed, not on the metacarpals at all, but on one of the carpal bones; it projects about an inch in length, with a slight curvature towards the radius.

There is an ungual phalanx, as in *Chauna*, at the extremity of the first digit, but I am not sure that there is any corneous covering in this case to represent the *unguis*. The whole of the first digit measures 1·3 in. in this bird, being rather more than in *Chauna derbiana*, although the radius and ulna are slightly shorter.

Fig. 3.

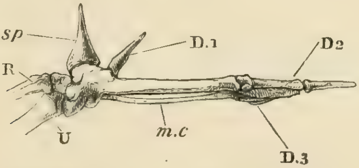


End of right wing of *Plectropterus gambensis*, reduced one half. *Sp*, spur. *D.* 1, first digit: *Ph.* 2, ungual phalanx of ditto. *D.* 2, second digit; *D.* 3, third digit. *m.c*, metacarpals. *U*, ulna. *R*, radius.

4. The Spur of *Parra*.

In *Parra* we return, as regards the single spur, to nearly the same arrangement as is found in *Chauna*. The spur is placed at the basal extremity of the coalesced metacarpals, whence it projects on the radial edge, about 0·4 in. in length. In the accompanying figure (fig. 4) it is represented of the natural size. Immediately in front of it is the first digit, which in this bird consists of a single phalanx much pointed at the extremity.

Fig. 4.



End of right wing of *Parra jacana*, of the natural size. *Sp*, spur. *D.* 1, *D.* 2, *D.* 3, digits. *R*, radius. *U*, ulna. *m.c*, metacarpals.

XXXV.—*A Review of the Species of the Family* Ploceidæ *of the Ethiopian Region.* By Captain G. E. Shelley, F.Z.S. —Part I. Viduinæ.

(Plate IX.)

The Ploceidæ, or Weavers, most nearly approach the Fringillidæ, from which they may be readily separated by their possessing an extra or bastard primary. From the Alaudidæ, which also have a bastard primary, they may be distinguished by their feet, which, in the Ploceidæ, are adapted for clinging on to boughs, and in the Alaudidæ for running on the ground. On the other side of the Ploceidæ I should place the Oriolidæ and the Sturnidæ.

The present review has been undertaken in the hopes of assisting in the comprehension of this intricate family, and in forming a classification which I shall be able to follow in future. I divide the Ploceidæ into two subfamilies of nearly equal proportions, the Viduinæ and the Ploceinæ; these two subfamilies are not very sharply marked, but their members will, I trust, be easily recognized.

The first subfamily, Viduinæ, to which I shall confine my observations at present, is distinguished by the bastard primary being very small and finely pointed, except in the genus *Spermospiza* and, possibly, in a few of the more nearly allied species, which are excessively rare in collections, and of which I have not been able to examine good series; nevertheless, from their general appearance, I believe their affinities to be probably much nearer to *Pytilia* than to any other genus.

With regard to the specimens examined, I shall only notice types, those from new localities, and those with dates.

Key to the Genera of VIDUINÆ.

a. Mantle never striped in any stage of plumage. Hind claw shorter and more curved. None of the inner feathers of the wing ever lanceolate. None of the tail-feathers ever obtusely pointed............ Div. 1. ESTRELDÆ.

  *a*¹. Bill comparatively slender and very unfinch-like. Distance from gonys to tip of lower mandible greater than the depth of the bill. Plumage with no bright red nor yellow. Entire underparts uniform. Tail entirely black .... 1. *Nigrita*, [p. 304.

  *b*¹. Bill stouter and finch-like.

    *b*². Tail square, and extending beyond the wing by about the length of the tarsus. Plumage mostly pale brown .... 2. *Philetærus*, [p. 307.

    *c*². Tail rounded or graduated.

      *c*³. Bill very stout; culmen arched.

        *c*⁴. With no red on the plumage, and no pale ends to the tail-feathers. Sexes very similar.

          *c*⁵. Breast white or nearly so, with dark mottlings on the sides. Tail rather short and rounded. Legs dark. Bill blue-black......................... 3. *Spermestes*, [p. 308.

          *d*⁵. Breast rarely white, and never with dark mottlings on the sides. Legs and bill rarely very dark .... 4. *Munia*, [p. 310.

        *d*⁴. With white ends to the tail-feathers. Sexes dissimilar. With some red confined to the heads of the males only .... 5. *Amadina*, [p. 312.

      *d*³. Bill very stout, and shaped like a pyramid. Culmen straight. Upper mandible with a powerful tooth near the base. Plumage brown or black, with the head, rump, and tail red .... 6. *Pyrenestes*, [p. 313.

e^{3}. Bill variable in strength. Culmen arched.

e^{4}. Tail rounded, but never decidedly graduated. Bill longer. Rump and upper tail-coverts generally red. Tail generally washed with red.

e^{5}. Wings more rounded; second primary never sinuated: primaries nearly uniform black or brown, never edged with olive, yellow, nor red. Bill blue or black. Mantle never grey.

e^{6}. Bill very strong.

e^{7}. Bill metallic blue, tipped with orange. Mantle black. Bastard primary very large, more than half the length of the next. Second and third quills considerably shorter than the fourth .... 7. *Spermospiza*, [p. 314.

f^{7}. Bill black. Mantle red. Second, third, and fourth primaries nearly equal .... 8. *Cryptospiza*, [p. 316.

f^{6}. Bill moderately strong. Breast black or brown, with large white spots .. 9. *Hypargus*, [p. 317.

f^{5}. Wings more pointed; second primary generally sinuated.

g^{6}. Quills never uniform but always broadly edged with olive, yellow, or red. Breast generally barred or boldly spotted, never red. Bill generally entirely red. Never with a distinct red band through the eye........................... 10. *Pytilia*, [p. 318.

h^{6}. Quills uniform brown. Throat and breast generally uniform vinous red. Generally with minute white spots on the sides of the chest. Bill never entirely red .... 11. *Lagonosticta*, [p. 321.

f^{4}. Tail generally decidedly graduated. Bill short. Tail-feathers rarely shaded with red. Bastard primary always small; second primary never sinuated. Tail reaching beyond the wing by more than the length of the tarsus .... 12. *Estrelda*, [p. 326.

g^{4}. Tail square and very short, not reaching beyond the wing by nearly the length of the tarsus .... 13. *Ortygospiza*, [p. 337.

b. Mantle striped in some stage of plumage. Hind claw longer, less curved, and more slender. Generally with some of the inner feathers of the wing lanceolate. Tail-feathers often obtusely pointed. . Div. 2. VIDUÆ.

*b*¹. In adult males feathers of the back never mottled with dark centres.

*b*². Tail square, or square with the exception of the four centre feathers. Plumage with no bright red nor yellow.

*b*³. Tail entirely square. Entire plumage glossy black. Bill and legs red .... 14. *Hypochera*, [p. 338.

*c*³. Tail square, with the two or four centre feathers very much elongated.............. 15. *Vidua*, [p. 339.

*c*². Tail rounded or graduated, and never very short: the ends of the feathers never obtusely pointed. Plumage: tail and breast entirely black .... 16. *Coliuspasser*, [p. 343.

*d*². Tail square, very short, and the feathers obtusely pointed. Plumage: tail brown, with pale margins to the feathers; adult males always with some bright red or yellow .... 17. *Pyromelana*, [p. 350.

*c*¹. Back always brown, with dark centres to the feathers. Tail short and square, with the ends of the feathers obtusely pointed.............. 18. *Quelea*, [p. 355.

1. NIGRITA.

1841. *Æthiops*, Strickl. P. Z. S. 1841. p. 30 (previously employed in Mammalia). Type. *N. canicapilla*.
1842. *Nigrita*, Strickl. P. Z. S. 1842, p. 145 . *N. canicapilla*.
1860. *Percnopis*, Heine, J. f. O. 1860, p. 144. *N. fusconota*.

The genus *Nigrita* is a very abnormal form with regard to the bill, and has been placed by Prof. Sundevall ('Avium Tentamen,' p. 20) in his family Ampelinæ, but, I consider, should be retained in the present family.

This genus consists of three groups: the first represented by the white-breasted and more slender forms *N. fusconota*, from south of the equator, and its northern representative *N. uropygialis*.

The second group consists of two stout little birds, with very arched bills, much compressed at their sides, *N. luteifrons* and *N. lucieni*, which I believe to be distinct species, although Dr. Hartlaub once described *N. lucieni* as the immature plumage of *N. luteifrons*. In the British Museum there are two adults, one from the Camaroons (*Crossley*), and an immature bird from the Gaboon (*Du Chaillu*), rightly determined as *N. luteifrons*. This immature bird has the plumage nearly uniform bluish grey, slightly darker above, and consequently differs from the type of *N. lucieni* and from a perfectly similar specimen from the Gaboon (*Walker*) in these two latter birds having the upper part of the head exactly similar to the adult of *N. luteifrons*, and on the sides of the head a broad black circle round the eye extending forward to the bill. Although I cannot prove that *N. lucieni* is not the adult female of *N. luteifrons*, I feel justified in keeping them separate.

The third group consists of *N. canicapilla*, its northern representative, *N. emiliæ*, and the rufous-breasted *N. bicolor*. *N. cinereocapilla*, Sharpe, is only a printer's error for *N. canicapilla*. *N. canicapilla*, Hartl. (Orn. W.-Afr. p. 130), from Aguapim should, I have no doubt, be referred to *N. emiliæ*, which, from my own experience, is the common species near Abouri in those mountains. Although I have not seen a Sénégambian specimen, I feel little doubt that the *N. canicapilla*, Rochebrune (Faun. Sénégamb. p. 236), refers to *N. emiliæ*. The locality "Gaboon" for *N. emiliæ*, in Sharpe's Cat. Afr. B. p. 61, is, I think, undoubtedly incorrect, having been copied from a dealer's label.

Key to the Species.

a. Underparts white. Mantle pale brown.
  a^1. Lower back uniform with mantle .... 1. *N. fusconota.*
  b^1. Lower back buff, much paler than mantle...... 2. *N. uropygialis.*
b. Underparts black or grey. Mantle grey.
  c^1. Forehead white. No white spots on wings.
    c^2. Underparts black in adults, grey in young.... 3. *N. luteifrons.*
    d^2. Underparts always grey. A broad black band round the eye .... 4. *N. lucieni.*
  d^1. Forehead and underparts black. Some white spots on wings.
    e^2. Slightly larger. Lower back white. With white tips to the greater wing-coverts and inner secondaries .... 5. *N. canicapilla.*
    f . Slightly smaller. Lower back darker. With

no white on the greater wing-coverts nor
secondaries .... 6. *N. emiliæ.*
c. Underparts reddish brown. Mantle dark slaty brown 7. *N. bicolor.*

1. Nigrita fusconota.

Nigrita fusconotus, Fraser, P. Z. S. 1842, p. 145, Fernando Po (type exam.); id. Zool. Typ. pl. 49.

Percnopis dorsofusca, Heine, J. f. O. 1860, p. 144.

Hab. W. Afr., from the Congo to the Gaboon and Fernando Po.

a, ♂. April, Chinchonxo (*Shelley Mus.*).

2. Nigrita uropygialis.

Nigrita uropygialis, Sharpe, Ibis, 1869, p. 384, pl. 11. fig. 1, Fantee (type exam.).

Hab. W. Afr., Gold Coast.

3. Nigrita luteifrons.

Nigrita luteifrons, J. & E. Verr. Rev. et Mag. Zool. 1851, p. 420, Gaboon.

Hab. W. Afr., Gaboon and Camaroons.

4. Nigrita lucieni.

Nigrita bocagei, Sharpe, MS.
Nigrita luteifrons, jr., Hartl. J.f.O. 1861, p. 176. . . . . } With the same type, Gaboon (Brit. Mus.).

Nigrita lucieni, Sharpe & Bouvier, Bull. S. Z. France, 1878, p. 75, Ungomoyo and Condé (type in *Brit. Mus.*).

Hab. W. Afr., Congo to Gaboon.

5. Nigrita canicapilla.

Æthiops canicapillus, Strickl. P. Z. S. 1841, p. 30, Fernando Po.

Nigrita canicapilla, Fraser, P. Z. S. 1842, p. 145; id. Zool. Typ. pl. 48.

Nigrita cinereocapilla, Sharpe, Ibis, 1869, p. 385 (laps. cal.).

Hab. W. Afr., Angola, from the Quanza to Abeokuta and Fernando Po.

a, ♂. March, Chinchonxo (*Shelley Mus.*).

6. Nigrita emiliæ.

Nigrita emiliæ, Sharpe, Ibis, 1869, p. 384, pl. 11. fig. 2, Fantee (type exam.); id. Cat. Afr. B. 1871, p. 61, "Gaboon (*Verreaux*)"!

? *Nigrita canicapilla,* Rochebrune, Faun. Sénégamb. 1884, p. 236, Casamanse, Gambia.

Hab. W. Afr., Gold Coast and ? Senegambia (*Rochebrune*).

a. February, Abouri (*Shelley*).

7. NIGRITA BICOLOR.

Pytelia bicolor, Hartl. Syst. Verz. Brem. 1844, p. 76, Gold Coast.

Nigrita bicolor, Sclat. Contr. Orn. 1852, p. 83.

Percnopis bicolor, Hein, J. f. O. 1860, p. 144.

Hab. W. Afr., from the Congo to Senegambia.

a. January, Cape-Coast Castle (*Shelley*). *b.* February, Abouri (*Shelley*).

2. PHILETÆRUS.

1837. *Philetairus,* Smith, Charlesworth's Mag. Nat. Hist. 1837, p. 536 . . . . . . Type. *P. socius.*

Key to the Species.

a. Mantle dark brown, with pale brown edges to the feathers. Breast pale brown, with a patch on the sides of the body of black feathers edged with buff...... 8. *P. socius.*

b. Mantle uniform pale brown.

- b^1. Crown black. Underparts white, with the sides of the body brown, mottled with large black blotches; central line of the breast similarly mottled ...... 9. *P. cabanisi.*
- c^1. Crown white. Underparts uniform brown, like the mantle .... 10. *P. arnaudi.*

8. PHILETÆRUS SOCIUS.

Loxia socia, Lath. Ind. Orn. i. 1790, p. 381, Cape.

Ploceus socius, Cuv. Règne An. i. 1817, p. 384.

Coccothraustes socia, Vieill. N. D. xiii. 1817, p. 540.

Philetairus lepidus, Smith, Charlesworth's Mag. Nat. Hist. 1837, p. 536.

Euplectes lepidus, Swains. An. in Menag. 1838, p. 309.

Philetærus lepidus, Smith, Ill. Zool. S. Afr. 1838, pl. 8.

Hab. S. Afr., between about 20° and 30° S. lat.

9. PHILETÆRUS CABANISI.

Nigrita cabanisi, Fischer & Reichen. J. f. O. 1884, p. 54, Pare in Masai (type exam.).

Hab. E. Afr., Pare.

10. PHILETÆRUS ARNAUDI.

" *Nigrita arnaudi,* Pucheran, MS. Paris Mus. ;" Bp. Consp. i. 1850, p. 444, White Nile; Heugl. Orn. N.O.-Afr. pl. 20.

Hab. N.E. & E. Afr., between 10° N. lat., and 3° S. lat., from the White Nile to Masai-land.

a, ♂. March, Lado. *b.* April, Wasonerbor (*Shelley Mus.*).

3. SPERMESTES.

	Type.
1837. *Spermestes,* Swains. B. W. Afr. i. p. 201	*S. cucullatus.*
1861. *Amaurestes,* Reichb. Singvög. p. 86, pl. 44. fig. 322	*S. fringilloides.*

Key to the Species.

a. Larger. Wing more than 2·2 inches long. Head and neck black. Mantle and wings brown, with a few white streaks on the wing-coverts .... 11. *S. fringilloides.*

b. Smaller. Wing less than 2 inches long. With no white streaks on the wing-coverts.

  b^1. Mantle and quills earthy brown, with a metallic green patch on the shoulders .... 12. *S. cucullatus.*

  c^1. Mantle chestnut. Quills black, partially barred with white .... 13. *S. rufodorsalis.*

  d^1. Head, neck, and mantle uniform black.

    d^2. Quills and rump strongly barred with white.. .... 14. *S. poens*

    e^2. Quill and rump uniform black, the former occasionally marked with a few white spots .... 15. *S. bicolor.*

11. SPERMESTES FRINGILLOIDES.

Ploceus fringilloides, Lafr. Mag. Zool. 1835, pl. 48.

Amadina fringilloides, Gray & Mitchell, Gen. B. ii. 1849, p. 370.

Munia fringilloides, Bp. Consp. i. 1850, p. 453.

Amaurestes fringilloides, Reichb. Singvög. 1861, p. 86, pl. 44. fig. 322.

Spermestes fringilloides, Oust. Nouv. Arch. du Mus. 1879, p. 112.

Hab. E. and W. Afr.: Zanzibar Province, Mosambique, Gaboon, Liberia, and Senegambia.

a. April, Zanzibar (*Shelley Mus.*).

12. SPERMESTES CUCULLATUS.

Spermestes cucullatus, Swains. B. W. Afr. i. 1837, p. 201, Afr.; Müll. Descr. Nouv. Ois. Afr. 1854, part iv. pl. 16.

Loxia prasipteron, Less. Rev. Zool. 1839, p. 104, Senegal.

Amadina cucullata, Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1849, p. 159.

Coccothraustes scutatus, Heugl. Syst. Uebers. 1856, p. 39. no. 388, N.E. Afr.

Spermestes scutatus, Heugl. J. f. O. 1863, p. 18.

Amadina, sp. ?, Kirk, Ibis, 1864, p. 321, Shupanga, on Zambesi.

Estrelda cucullata, Gurney, Ibis, 1868, p. 46.

Hab. The whole of Africa south of about 16° N. lat., and the Comoro Islands.

a. August, Rimo, N.E. Afr. *b, c.* October and November, Durban. *d.* April, Accra. *e, f.* February and March, Cape-Coast Castle. *g.* April, Elmira (*Shelley Mus.*).

13. SPERMESTES RUFODORSALIS.

Spermestes rufodorsalis, Peters, J. f. O. 1863, p. 401, Inhambani.

Amadina punctipennis, Bianc. Spec. Zool. Mosamb. fasc. xviii. 1867, p. 325, pl. 4. fig. 1.

Hab. E. and S. Afr., east coast from Lamu to Inhambani.

14. SPERMESTES POENSIS.

Amadina poensis, Fraser, P. Z. S. 1842, p. 145, Fernando Po; id. Zool. Typ. pl. 50. fig. 1.

Spermestes poensis, Bp. Consp. i. 1850, p. 454.

Hab. W. Afr., Congo to Gaboon and Fernando Po. Probably entirely replaced by *S. bicolor* north of the Equator.

15. SPERMESTES BICOLOR.

Amadina bicolor, Fraser, P. Z. S. 1842, p. 145, Cape Palmas; id. Zool. Typ. pl. 50. fig. 2.

Spermestes bicolor, Bp. Consp. i. 1850, p. 454.

? *Amadina poensis,* Hartl. Orn. W.-Afr. 1857, p. 148 (part.) Casamanse.

? *Spermestes poensis,* Rochebrune, Faun. Sénégamb. 1884, p. 248.

Hab. W. Afr., from the Gold Coast to the Bulama Islands and probably Senegambia.

a. February, Abouri (*Shelley*).

4. MUNIA.

		Type.
1836.	*Munia,* Hodgs. As. Research. xix. p. 153	*M. rubronigra.*
1850.	*Padda,* Reichb. Syst. Nat. pl. 76	*M. oryzivora.*
1851.	*Oryzornis,* Cab. Mus. Hein. i. 1851, p. 172	*M. oryzivora.*
1851.	*Urolonga,* Cab. t. c. p. 173	*M. cantans.*
1861.	*Eudice,* Reichb. Singvög. p. 46, pl. 16. figs. 146–149	*M. cantans.*
1861.	*Lepidopygia,* Reichb. t. c. pl. 17. fig. 152	*M. nana.*

This genus, as I have employed it, may have somewhat the appearance of a refuge for the destitute. It is not a very sharply defined group, but I consider it more advantageous to keep these five species together than, as I should otherwise have done, to divide them into five genera, which would follow each other in the same order in which I have placed the species. I have examined good specimens of all these forms, and do not find distinguishing characters of sufficient importance to render their generic separation imperative, and they appear to me to constitute a group sufficiently easily recognizable not to be confounded with any other of the genera that I have employed.

Key to the Species.

a. Upper parts olive-yellow. Sides of head white. In the male the black of the chin and upper throat extends behind the ear-coverts .... 16. *M. sharpii.*

b. With no olive nor yellow on the upper parts.

- b^1. Bill not pink. Cheeks and ear-coverts not uniform white.
  - b^2. Lower mandible red, upper one blackish. Upper throat black. Rump and upper tail-coverts brown .... 17. *M. nana.*
  - c^2. Both mandibles of the same colour. No black on throat. Head more or less spotted.
    - c^3. Underparts nearly white. Rump and upper tail-coverts black. Inner wing-feathers barred...................... 18. *M. cantans.*
    - d^3. Head and neck grey. Breast rufous-buff. Rump and upper tail-coverts white .... 19. *M. caniceps.*
- c^1. Bill pink. Mantle and chest grey. Cheeks and ear-coverts white...................... 20. *M. orizivora.*

16. Munia sharpii.

Amadina sharpii, Nicholson, P. Z. S. 1878, p. 130, pl. 10, Abeokuta (type exam.).

Hab. W. Afr., Abeokuta.

17. Munia nana.

Pyrrhula nana, Pucher. Mag. Zool. 1845, pl. 58, Madagascar.

Spermestes nana, Bp. Consp. i. 1850, p. 454; Milne-Edw. and Grandid. Hist. Madag. Ois., Atlas, ii. pl. 183. figs. 1, 2.

Lepidopygia nana, Reichb. Singvög. 1861, p. 46, pl. 17. fig. 152.

Hab. Madagascar.

18. Munia cantans.

Loxia cantans, Gm. S. N. i. 1788, p. 859.

Coccothraustes cantans, Vieill. N. D. xiii. 1817, p. 529.

Fringilla cantans, Licht. Verz. Doubl. 1823, p. 27.

Estrelda cantans, Rüpp. Syst. Uebers. 1845, p. 77.

Amadina cantans, Gray & Mitchell, Gen. B. ii. 1849, p. 370.

Uroloncha cantans, Cab. Mus. Hein. i. 1851, p. 173.

Eudice cantans, Reichb. Singvög. 1861, p. 46, pl. 16. figs. 146–149.

Spermestes cantans, Finsch, Trans. Z. S. vii. 1869, p. 268.

Hab. N.E., E., and W. Afr., southward from about 16° N. lat. to Massiro in 4° S. lat. E. Africa, and in W. Africa confined to Senegambia.

19. MUNIA CANICEPS.

Pytelia caniceps, Reichen. Orn. Centralbl. 1879, p. 139, Massa in E. Afr.; Reichen. & Schal. J. f. O. 1879, p. 326, pl. 2. fig. 3 (type exam.).

Spermestes caniceps, Hartl. Abhandl. nat. Ver. Brem. viii. 1882, p. 203.

Hab. E. Afr., Lado to Masai-land.

a, ♂. April, Tarrangola (*Emin Bey, Shelley Mus.*).

20. MUNIA ORIZIVORA.

Loxia orizivora, Linn. S. N. i. p. 302.

Padda, Vieill. Ois. Chant. 1805, pl. 61.

Coccothraustes orizivora, Vieill. N. D. xiii. 1817, p. 545.

Munia orizivora, Bp. Consp. i. 1850, p. 451.

Oryzornis orizivora, Cab. Mus. Hein. i. 1851, p. 172.

Padda orizivora, Reichb. Singvög. 1861, p. 42, pl. 15. figs. 135–139.

Hab. E. Afr., only as an introduced bird, Zanzibar Province, Mauritius, and Réunion.

5. AMADINA.

		Type.
1827.	*Amadina,* Swains. Zool. Journ. iii. 1827, p. 349	*A. fasciata.*
1851.	*Sporothlastes,* Cab. Arch. f. Naturg. 1847, pt. i. p. 331	*A. fasciata.*

Key to the Species.

a. Upper parts barred with black. Males with the ear-coverts and a broad band across the throat red	21. *A. fasciata.*
b. Upper parts with no black bars. Males with the entire head red	22. *A. erythrocephala.*

21. AMADINA FASCIATA.

Loxia fasciata, Gm. S. N. i. 1788, p. 859.

Loxie fasciée, Vieill. Ois. Chant. 1805, pl. 58.

Loxia jugularis, Shaw (*fide* Giebel, Thes. Orn.).

Coccothraustes fasciatus, Vieill. N. D. xiii. 1817, p. 529.

Fringilla detruncata, Licht. Verz. Doubl. 1823, pp. 25, 26.

Amadina fasciata, Swains. Zool. Journ. iii. 1827, p. 349; id. B. W. Afr. i. pl. 15.

Sporothlastes fasciatus, Cab. Mus. Hein. i. 1851, p. 173.

Hab. N.E., E., and W. Afr., southward from about 17° N. lat. to Masai-land in E. Africa, and to Casamanse on the West Coast.

22. AMADINA ERYTHROCEPHALA.

Loxia erythrocephala, Linn. S. N. i. 1766, p. 301.

Loxia brasiliana, Gm. S. N. i. 1788, p. 848.

Grevelin, Vieill. Ois. Chant. 1805, pl. 49.

Coccothraustes erythrocephala, Vieill. N. D. xiii. 1817, p. 530.

Loxia maculosa, Burch. Trav. S. Afr. ii. 1822, p. 269, S. Afr.

Fringilla reticulata, Voigt, Cuv. Thierreich, i. 1831, p. 582.

Amadina erythrocephala, Smith, Ill. Zool. S. Afr. 1841, pl. 69.

Sporothlastes erythrocephala, Cab. Mus. Hein. i. 1851, p. 173.

Hab. S. and W. Afr. It ranges from Matabele and the Transvaal to Great and Little Namaqua, Damara, Lake Ngami, Benguela, and northward to the Loango Coast in W. Africa.

a, ♂. June, Bloomfontein (*Shelley Mus.*).

6. PYRENESTES.

	Type.
1837. *Pyrenestes,* Swains. B. W. Afr. i. p. 156 .	*P. ostrinus.*

Of this genus I can only recognize one species: it is subject to considerable variation, which I am unable to account for.

The general plumage is sometimes brown and sometimes black; that this is not a sexual difference is fully proved by Mr. J. Büttikofer, who met with a colony all breeding in the brown plumage in Liberia in October (Notes from the Leyden Mus. 1885, p. 199). That the colouring is not mere seasonal is shown by a specimen in the British Museum, labelled "♂, November, Shonga on Niger (*Forbes*)," which is a large specimen in a black plumage; and I have never seen a bird in the moult between the two.

With regard to size, a typical large brown specimen in my own collection measures—wing 2·95 inches; while the type of the small race, *P. coccineus*, has the wing 2·2 inches. Two of my own specimens from the Gold Coast, agreeing well with the figure of *P. coccineus*, have their wing 2·45 and 2·70 inches; so I cannot admit size to be of any specific value, and the difference in the strength of the bill, which is very variable, is probably due to age. In the British Museum there is a black specimen of the small form from the Gold Coast.

23. PYRENESTES OSTRINUS.

Loxia ostrinus, Vieill. Ois. Chant. 1805, p. 79, pl. 48.

Coccothraustes ostrinus, Vieill. N. D. xiii. 1817, p. 548.

Pyrenestes sanguineus, Swains. B. W. Afr. i. 1837, p. 156, pl. 9.

Pyrenestes coccineus, Cass. Pr. Ac. Philad. 1848, p. 67, Sierra Leone, Monrovia; id. Journ. Ac. Philad. 1849, pl. 31. fig. 2.

Pyrenestes ostrinus, Bp. Consp. 1850, p. 450.

Pyrenestes personatus, Du Bus, Bull. Ac. Brux. xxii. part 1, 1855, p. 151, Senegal.

Hab. W. Afr., from the Gaboon to Senegambia.

7. SPERMOSPIZA.

		Type.
1837.	*Spermophaga*, Swains. B. W. Afr. i. p. 164 (nec Schönh. 1833, Ent.)	*S. hæmatina.*
1840.	*Spermospiza*, Gray, List Gen. B. p. 43 .	*S. hæmatina.*

With regard to the genus *Spermospiza* I agree with Verreaux in recognizing two species—*S. hæmatina*, originally named after a male specimen, and *S. guttata,* after a female specimen. Although there is a great resemblance between these two species, and the sexes differ in a remarkably similar manner, there appear to be good characters for their separation, and distinct geographical areas for their distribution.

M. Rochebrune (Faun. Sénégamb. p. 246) only admits one species of *Spermospiza*; but as his description of the sexes and young does not agree with the evidence before me, I have been obliged to disregard his observations. I have in my own collection an undoubtedly young bird with no white whatever on the breast (agreeing perfectly with a young bird in the British Museum), and an adult bird with the sides of the head, upper tail-coverts, and the abdomen entirely black, which was marked "male" by Mr. Burton, naturalist, in Wardour Street; and I have no doubt as to his correctness in this matter, as at the time I asked him to be very particular, for the bird having died in Mr. Wiener's aviary, he was specially anxious to ascertain the sex. This form, however, is regarded by M. Rochebrune as the female, and the specimens with white spots on the abdomen as the young.

The remaining genera of the division Estrelda appear to constitute three very natural groups:—

1. *Spermospiza* group: comprising *Spermospiza, Cryptospiza,* and *Hypargus.*
2. *Pytilia* group: comprising *Pytilia* and *Lagonosticta.*
3. *Estrelda* group: comprising *Estrelda* and *Ortygospiza.*

Key to the Species.

a. Bill only tipped with orange-red, that colour not extending more than halfway down the cutting-edge of the lower mandible.
  *a*¹. Entire upper parts as well as the sides of the head and abdomen uniform black .... 24. *S. hæmatina,* ♂.
  *b*¹. Sides of the head, front of crown, and upper tail-coverts red, of a much darker shade than the throat; abdomen black, spotted or barred with white .... *S. hæmatina,* ♀.

b. Bill with the entire cutting-edges of both mandibles broadly edged with orange-red; sides of the head and upper tail-coverts bright red, of the same shade as the throat; no portion of the crown nor centre of the forehead washed with red in either sex.

*b*¹. Abdomen uniform black .... 25. *S. guttata*, ♂.
*c*¹. Abdomen black, spotted or barred with white *S. guttata*, ♀.

24. SPERMOSPIZA HÆMATINA.

Loxia hæmatina, Vieill. Ois. Chant. 1805, p. 102, pl. 67, Africa.

Coccothraustes hæmatina, Vieill. N. D. xiii. 1817, p. 534.

Spermophaga cyanorhyncha, Swains. B. W. Afr. i. 1837, p. 164.

Spermospiza hæmatina, Gray, List Gen. B. 1840, p. 43 (part.).

Spermospiza guttata, Sharpe, Ibis, 1869, p. 384, ♀, Fantee.

Hab. W. Afr., Abeokuta to Senegambia.

a. March, Cape-Coast Castle (*Shelley*). *b*. March, Wassaw (*Shelley Mus.*).

25. SPERMOSPIZA GUTTATA.

Loxia guttata, Vieill. Ois. Chant. 1805, p. 103, pl. 68, ♀, Congo.

Coccothraustes guttata, Vieill. N. D. xiii. 1817, p. 533.

Fringilla pustulata, Voigt (nec Ill.), Cuv. Thierr. ii. 1831, p. 581.

Spermospiza guttata, J. Verr. Rev. et Mag. Zool. 1852, p. 312.

Spermospiza hæmatina, Oust. Nouv. Arch. du Mus. 1879, p. 113, Ogowe.

Hab. W. Afr., Congo to the Gaboon.

8. CRYPTOSPIZA.

Type.
1884. *Cryptospiza*, Salvad. Ann. Mus. Civ. Gen. 1884, p. 180 . . . . *C. reichenowi*.

So far as I can judge from a hasty examination of the type of *Cryptospiza reichenowi*, which is mounted in the Berlin Museum, I think it is rightly placed in a genus by itself, and apparently forms a somewhat natural link between *Spermospiza* and *Hypargus*.

26. CRYPTOSPIZA REICHENOWI.

Pytelia reichenowii, Hartl. Ibis, 1874, p. 166, Bondongo, in Camaroons; Reichen. J. f. O. 1875, pl. 2. fig. 1.

Cryptospiza reichenowi, Salvad. Ann. Mus. Civ. Gen. 1884, p. 180, Shoa.

Hab. N.E. and W. Afr., Shoa and Camaroons.

9. HYPARGUS.

Type.
1861. *Hypargus,* Reichb. Singvög. p. 21, pl. 6. fig. 49 . . . . *H. margaritatus.*

As all the species of this genus are rare, I have not been able to examine a sufficient number of specimens to draw any definite characters from the relative measurements of the quills.

Key to the Species.

a. Dark portion of the breast black; entire throat and sides of the head red.
  a^1. Spots on breast smaller and snow-white . . . . 27. *H. niveiguttatus.*
  b^1. Spots on breast larger and shaded with pink . 28. *H. margaritatus.*
b. Dark portion of the breast rufous-brown; sides of the head and throat grey . . . . 29. *H. monteiri.*

27. HYPARGUS NIVEIGUTTATUS.

Spermospiza guttata, Bianc. (nec V.), Spec. Zool. Mosamb. fasc. xviii. 1867, p. 326, Mosambique.

Spermophaga niveiguttata, Peters, J. f. O. 1868, p. 133, Inhambani.

Hypargus niveiguttatus, Shelley, P. Z. S. 1881, p. 588, pl. 52. fig. 2.

Hab. E. and S. Afr. The east coast between 2° and 25° S. lat., from Lamu to Inhambani.

28. HYPARGUS MARGARITATUS.

Spermophaga margaritata, Strickl. Ann. & Mag. Nat. Hist. xiii. 1844, p. 418, pl. 10, Cape Town.

Amadina verreauxi, Des Murs, Icon. Orn. 1849, pl. 64.

Habropyga margaritata, Bp. Consp. i. 1850, p. 461.

Hypargos verreauxi, Reichb. Singvög. 1861, p. 22, pl. 6. fig. 49.

Hypargus margaritatus, Sharpe, ed. Layard's B. S. Afr. 1884, p. 476.

Hab. S. Afr., Cape Town.

29. HYPARGUS MONTEIRI.

Pytelia monteiri, Hartl. P. Z. S. 1860, p. 111, pl. 161, Bembe in Angola.

Hab. N.E. and W. Afr.: Upper White Nile, about 5° N. lat., and from Angola to the Loango Coast.

a, ♀. November, Kudermo (*Emin Bey*). *b,* ♂; *c,* ♀. Landana (*Shelley Mus.*).

10. PYTILIA.

		Type.
1837.	*Pytilia,* Swains. B. W. Afr. i. p. 202, note	*P. phœnicoptera.*
1837.	*Pytelia,* Swains. Class. B. ii. p. 280 .	*P. phœnicoptera.*
1851.	*Zonogastris,* Cab. Mus. Hein. i. p. 172	*P. melba.*
1861.	*Marquetia,* Reichb. Singvög. p. 48 .	*P. melba.*

Pytilia and *Lagonosticta* run very naturally into each other, and show their affinities to *Hypargus* mostly in the pattern of the colouring of the underparts of some of the *Pytiliæ* and in the upper parts of the *Lagonostictæ*.

Pytelia capistrata, Hartl., I refer to under the genus *Estrelda.*

I have not seen a specimen of *P. lineata.*

Key to the Species.

a. Upper parts entirely olive; underparts pale olive, many of the breast-feathers with dusky centres, each enclosing two large white spots. 30. *P. nitidula.*

b. Breast black, boldly spotted with white in the male; entire plumage olive in the female; bill red . . . . 31. *P. schlegeli.*

c. Breast barred; rump and upper tail-coverts and portion of the tail red; bill uniform red or slaty grey.

c^1. Of a more olive shade; wing-feathers never margined with bright red.

c^2. Bill red in the adults; general plumage less grey.

c^3. Quills edged with olive-yellow; in adult males lower throat and crop yellow; breast paler and more distinctly barred .... 32. *P. melba.*

d^3. Quills edged with orange-yellow; in adult males lower throat and crop grey; breast darker and less regularly barred .... 33. *P. afra.*

d^2. Bill slaty blue; general plumage greyer; wing-feathers margined with deep yellow .... 34. *P. hypogrammica.*

d^1. General plumage grey; wing-feathers margined with bright red.

e^2. Bill slaty grey .... 35. *P. phœnicoptera.*

f^2. Bill red .... 36. *P. lineata.*

30. PYTILIA NITIDULA.

Estrelda nitidula, Hartl. Ibis, 1865, p. 269, Natal.

Amadina hartlaubi, Bianc. Spec. Zool. Mosamb. fasc. xviii. 1867, p. 324, pl. 4. fig. 2.

Hab. S. Afr.: Natal, and "Mosambique" (*Bianconi*), probably Inhambani.

a, ♂. Durban (*Shelley Mus.*).

31. PYTILIA SCHLEGELI.

Pytelia schlegeli, Sharpe, Ibis, 1870, p. 482, pl. 14. fig. 2 ♂, 3 ♀, Fantee.

Hab. W. Afr.: Gaboon, Fantee, and Liberia.

32. PYTILIA MELBA.

Fringilla melba, Linn. S. N. i. 1766, p. 319, "China"!

Fringilla speciosa, Bodd. Pl. Enl. 1783, pl. 203. fig. 1.

Fringilla elegans, Gm. S. N. i. 1788, p. 912; Vieill. & Oud. Gal. Ois. i. pl. 64.

? *Fringilla formosa*, Lath. Ind. Orn. i. 1790, p. 441, "India"!

Fringille beau marquet, Vieill. Ois. Chant. 1805, p. 49, pl. 25.

Loxigilla elegans, Less. Traité Orn. 1831, p. 444.

Estrelda elegans, Rüpp. Neue Wirb. 1835–40, p. 101.

Estrelda speciosa, Des Murs in Lefebvre's Voy. Abyss. 1845–50, p. 173.

Estrelda melba, Gray & Mitchell, Gen. B. ii. 1849, p. 369.

Pytelia melba, Bp. Consp. i. 1850, p. 461.

Zonogastris elegans, Cab. Mus. Hein. i. 1851, p. 172.

Pytelia citerior, Strickl. Contr. Orn. 1852, p. 151.

Marquetia elegans, Reichb. Singvög. 1861, p. 48, pl. 18. figs. 159, 160.

Zonogastris citerior, Heugl. J. f. O. 1868, p. 19.

Zonogastris melba, Heugl. Orn. N.O.-Afr. 1871, p. 138.

Hab. The whole of Africa south from about 16° N. lat., with the exception of tropical West Africa between the Gaboon and Casamanse.

The northern and southern forms have frequently been separated under the titles of *P. citerior* and *P. melba,* but the characters are not, I consider, sufficiently constant and well marked.

a, ♂. August, Kuro (*Jesse*). *b.* May, Lado (*Emin Bey*). *c,* ♀. October, Bamangwato. *d,* ♂. September, Matabele. *e,* ♂ juv. June. *f,* ♂. December, Damara (*Shelley Mus.*).

33. Pytilia afra.

Fringilla afra, Gm. S. N. i. 1788, p. 905; Vieill. N. D. xii. 1817, p. 243 (type exam.).

Estrelda afra, Gray & Mitchell, Gen. B. ii. 1849, p. 369.

Pytelia afra, Bp. Consp. i. 1850, p. 462.

Pytelia melba, F. & H. Vög. Ostafr. 1870, p. 442 (part.).

Pytelia wieneri, Russ, Gef. Welt. August 1877, p. 317; Forbes, P. Z. S. 1880, p. 40, pl. 47. fig. 2.

Pytelia cinereigula, Cab. Orn. Centralbl. December 1877, p. 182, Mombas (type exam.).

Hab. E. and W. Afr.: Zanzibar Province from Lamu to Dar-es-Salaam, and from Angola to Landana.

a, ♂. March, Landana (*Shelley Mus.*).

34. Pytilia hypogrammica.

Pytelia hypogrammica, Sharpe, Ibis, 1870, p. 56, Fantee (type exam.).

Hab. W. Afr., Niger and Gold Coast.

a, ♀. February, Abokobie in Aguapim (*Shelley*).

35. PYTILIA PHŒNICOPTERA.

Pytilia phœnicoptera, Swains. B. W. Afr. i. 1837, p. 203, pl. 16.

Estrelda erythropteron, Less. Echo du Monde Sav. 1844, p. 295, Gambia.

Zonogastris phœnicoptera, Heugl. Orn. N.O.-Afr. 1871, p. 622.

Hab. N.E. and W. Afr., Upper White Nile and Senegambia.

36. PYTILIA LINEATA.

Fringilla (*Estrelda*) *lineata*, Heugl. Syst. Uebers. 1856, p. 40. no. 401 (no descr.).

Pytelia lineata, Heugl. J. f. O. 1863, p. 17 (orig. descr.).

Zonogastris lineata, Heugl. J. f. O. 1868, p. 21; id. Orn. N.O.-Afr. 1871, p. 623, pl. 19. fig. 1 (head).

Hab. N.E. Afr., Abyssinia.

11. LAGONOSTICTA.

		Type.
1851.	*Lagonosticta*, Cab. Mus. Hein. i. p. 171	*L. rubricata.*
1850.	*Amandava*, Bp. Consp. i. p. 459 (part.)	*L. amandava* (Linn.).
1868.	*Rhodopyga*, Heugl. J.f.O. 1868, p. 13, pl. 1. fig. 3	*L. rhodopsis.*
1873.	*Lychnidospiza*, Heugl. Orn. N.O.-Afr. App. p. cxxxvii	*L. rara.*

Estrelda shows its affinities to the present genus through its red-rumped, rounded-tailed members, especially when we compare the grey *L. nigricollis* with *E. cærulea*.

Key to the Species.

a. With no black on the head nor throat.
  *a*¹. Sides of the head, the throat, and sides of the chest vinous red.
    *a*². Bill red, with the culmen black; under tail-coverts not black.

- a^3. With a pink shade on the red portions; crown and mantle ashy brown, with no red shade .... 37. *L. rufopicta.*
- b^3. With no pink shade on the red portions; entire crown, neck, and mantle washed with red .... 38. *L. senegala.*
- b^2. Bill slaty black; under tail-coverts black.
  - c^3. Crown and mantle washed with red.
    - c^4. Chest black, with only the sides of the crop red; with no trace of white spots on the sides of the chest .... 39. *L. rara.*
    - d^4. Entire chest red; with white spots on the sides of the chest.
      - d^5. Red parts darker and much brighter .. 40. *L. rhodopareia.*]
      - e^5. Red parts paler and pinker .... 41. *L. jamesoni.*
  - d^3. Crown and mantle not washed with red.
    - f^4. With a pale base to the lower mandible; back and wings brown, and less ashy than the crown and back of the neck ...... 42. *L. rubricata.*
    - g^4. With no portion of the bill pale; crown, back of neck, back, and wings uniform deep slaty brown .... 43. *L. polionota.*
- b^1. Entire underparts duller, nearly uniform ashy brown, only slightly tinted with red; with no trace of white spots on the sides of the chest.. 44. *L. rhodopsis.*
- *b*. With the sides of the head and upper throat black.
  - h^1. Black of head and throat surrounded by red.
    - h^2. Black of crown confined to the forehead; chest red, with no white spots on the sides ...... 45. *L. vinacea.*
    - i^2. Front half of crown and lower chest black; with white spots on sides of the chest...... 46. *L. larvata.*
  - i^1. Black of head surrounded by grey; forehead, crown, mantle, and breast uniform grey; with white spots on the sides of the chest .... 47. *L. nigricollis.*

37. LAGONOSTICTA RUFOPICTA.

Estrelda rufopicta, Fraser, P. Z. S. 1843, p. 27, Gold Coast; id. Zool. Typ. pl. 51.

Lagonosticta rufopicta, Reichb. Singvög. 1861, p. 19, pl. 4. fig. 38.

Lagonosticta (*Estrelda*) *lateritia,* Heugl. J. f. O. 1864, p. 251, N.E. Afr.

Pytelia rufopicta, Fisch. J. f. O. 1869, p. 336.

Astrilda rufopicta, Hartl. Abhandl. nat. Ver. Brem. xii. 1881, p. 103.

Estrelda bilineata, Gray, MS. in Brit. Mus., Niger (type exam.).

Hab. N.E. and W. Afr.: Upper White Nile, and from the Niger to Senegambia.

a. March, Cape-Coast Castle (*Shelley*).

38. LAGONOSTICTA SENEGALA.

Sénégali rouge, Briss. Orn. iii. 1760, p. 208, pl. 10. fig. 2.

Fringilla senegala, Linn. S. N. i. 1766, p. 320, ex Briss.

? *Fringilla ignita,* Gm. S. N. i. 1788, p. 906, ex Brown.

Petit Sénégali rouge, Vieill. Ois. Chant. 1805, p. 31, pl. 10.

Fringilla minima, Vieill. N. D. xii. 1817, p. 183, ex Ois. Chant. pl. 10.

Estrelda minima, Rüpp. Neue Wirb. 1835–40, p. 101.

Lagonosticta minima, Cab. Mus. Hein. i. 1851, p. 172.

Lagonosticta ignita, Reichb. Singvög. 1861, p. 18, pl. 4. fig. 36.

Lagonosticta senegala, Reichb. t. c. fig. 37.

Estrelda senegala, Hartl. Orn. W.-Afr. 1857, p. 143.

Pytelia minima, Finsch, Trans. Z. S. vii. 1869, p. 267.

Lagonosticta russi, Reichen. J. f. O. 1875, p. 453 (type exam.).

Estrelda rueppelli, Gray, MS. in Brit. Mus. (type exam.).

Hab. N.E., E., and W. Afr. The whole of E. Africa from 17° N. lat. to Durban in Natal, Damara, Loango Coast, Niger, Casamanse, and Senegambia.

39. LAGONOSTICTA RARA.

Lagonosticta vel *Estrelda melanogastra,* Heugl. (nec Swains.) J. f. O. 1863, p. 273, Djur and Kosango.

Habropyga rara, Antin. Cat. 1864 (March), p. 72.

Estrelda vel *Habropyga hypomelas,* Heugl. J. f. O. 1864 (May), p. 252.

Rhodopyga hypomelas, Heugl. J. f. O. 1868, p. 13, pl. 1. fig. 4.

Rhodopyga rara, Salvad. Att. R. Ac. Tor. 1870, p. 742.

Habropyga hypomelæna, Heugl. Orn. N.O.-Afr. 1871, p. 611.

Lychnidospiza melanogastra, Heugl. Orn. N.O.-Afr. 1873, p. cxxxvii.

Hab. N.E. and W. Afr.: Upper White Nile, and Lukoja on Niger. Between 5° and 10° N. lat., but not recorded to the west of 5° E. long., nor east of 35° E. long.

a, ♂. August, Lukoja on Niger (*Forbes, Brit. Mus.*).

40. LAGONOSTICTA RHODOPAREIA.

Lagonosticta rhodopareia, Heugl. J. f. O. 1868, p. 16, Bogos.

Estrelda rhodopareia, F. & H. Vög. Ostafr. 1870, p. 446, note.

Lagonosticta rubricata, Heugl. Orn. N.O.-Afr. 1871, p. 615.

? *Estrelda rubricata,* Reichen. J. f. O. 1877, p. 229, Loango Coast.

Lagonosticta polionota, Cab. (nec Shelley) J. f. O. 1878, p. 229, Mombas; Shelley, P. Z. S. 1881, p. 588, Dar-es-Salaam.

? *Lagonosticta rubricata,* Bocage, Orn. Angola, 1881, p. 362, Landana.

Habropyga œnochroa, Hartl. Orn. Centralbl. 1882, p. 91, Central Afr. (type exam.).

Hab. N.E., E., and ? W. Afr. Southward in E. Africa from 21° N. lat. to Dar-es-Salaam; and I expect it is the species referred to above from the Loango Coast and Landana.

a. Dar-es-Salaam (*Kirk, Shelley Mus.*).

41. LAGONOSTICTA JAMESONI.

Lagonosticta jamesoni, Shelley, Ibis, 1882, p. 355, Matabele.

Hab. S. Africa, Matabele.

a, ♂. December, Tatin R. *b*, ♀. August, Umvuli R. (*Jameson, Shelley Mus. types*).

42. LAGONOSTICTA RUBRICATA.

Fringilla rubricata, Licht. Verz. Doubl. 1823, p. 27, Caffraria.

Estrelda rubricata, Gray & Mitchell, Gen. B. ii. 1849, p. 368.

Lagonosticta rubricata, Cab. Mus. Hein. i. 1851, p. 171.

Hab. S. Africa: Transvaal, Natal, and Cape Colony.

The references recording this species from Loango Coast and Landana I have referred to *L. rhodopareia*, as I fancy it is more probably the bird intended.

a. May. *b.* August, Natal (*Shelley Mus.*).

43. LAGONOSTICTA POLIONOTA.

Lagonosticta polionota, Shelley, Ibis, 1873, p. 141, Fantee.

Hab. W. Africa, Gold Coast.

a. March, Cape-Coast Castle (*Shelley, type*).

44. LAGONOSTICTA RHODOPSIS.

Estrelda rhodopsis, Heugl. J. f. O. 1863, p. 166, Gazal river.

Rhodopyga rhodopsis, Heugl. J. f. O. 1868, p. 13, pl. 1. fig. 3.

Habropyga rhodopsis, Heugl. Orn. N.O.-Afr. 1871, p. 610.

Hab. N.E. Africa, Upper White Nile district.

45. LAGONOSTICTA VINACEA.

Estrelda vinacea, Hartl. Orn. W.-Afr. 1857, p. 143, Casamanse.

Lagonosticta vinacea, Reichb. Singvög. 1861, p. 18.

Hab. W. Africa: Casamanse, Senegambia.

46. LAGONOSTICTA LARVATA.

Anadina larvata, Rüpp. Neue Wirb. 1835–40, pp. 97, 101, pl. 36. fig. 1, Simen.

Habropyga larvata, Bp. Consp. i. 1870, p. 461.

Lagonosticta larvata, Heugl. J. f. O. 1868, p. 16.

Hab. N.E. Africa, Abyssinia.

47. LAGONOSTICTA NIGRICOLLIS.

Estrelda nigricollis, Heugl. J. f. O. 1863, p. 273.

Habropyga larvata, Antin. Cat. 1864, p. 71, fide Salvad. Att. R. Ac. Tor. 1870, p. 742.

Lagonosticta nigricollis, Heugl. J. f. O. 1868, p. 17, pl. 1. fig. 1.

Hab. N.E. and W. Africa: Upper White Nile district, and Lukoja on Niger.

a, ♂. Lukoja, August (*Forbes, Brit. Mus.*).

12. ESTRELDA.

		Type.
1815.	*Bengalis,* Rafinesque, Analyse, 1815, p. 68 (no descr.)	?
1827.	*Estrelda,* Swains. Zool. Journ. iii. 1827, p. 349	*E. astrild.*
1831.	*Loxigilla,* Less. Traité Orn. p. 443 (part.)	?
1847.	*Habropyga,* Cab. Arch. f. Naturg. 1847, pt. i. p. 331	*E. astrild.*
1850.	*Granatina,* Bp. Consp. i. p. 458	*E. granatina.*
1850.	*Neisna,* Bp. t. c. p. 460	*E. subflava.*
1851.	*Sporæginthus,* Cab. Mus. Hein. i. p. 170	*E. subflava.*
1851.	*Uræginthus,* Cab. t. c. p. 171	*E. granatina.*
1861.	*Mariposa,* Reichb. Singvög. p. 6, pl. 1. figs. 1, 2	*E. angolensis.*
1861.	*Astrilda,* Reichb. t. c. p. 8	*E. granatina.*
1861.	*Coccopygia,* Reichb. t. c. p. 23	*E. quartini.*
1861.	*Melpoda,* Reichb. t. c. p. 26, pl. 7. figs. 62–64	*E. melpoda.*
1861.	*Brunhilda,* Reichb. t. c. p. 48, pl. 18. fig. 158	*E. erythronota.*
1873.	*Haplopygia,* Heugl. Orn. N.O.-Afr. 1873, App. p. cxxxvii	*E. astrild.*

The division Estreldæ I end with *Ortygospiza,* which, in some respects, forms a connecting link with the division Viduæ, which I begin with *Hypochera.*

Bengalis, Rafin., was probably intended for this genus; but no characters were given, and no type ever indicated. *Habropyga* was proposed as an amendment for *Estrelda,* but is, I consider, inadmissible. I may point out that if this genus is broken up as has been frequently done, *Granatina,* Bp., has priority over *Uræginthus,* Cab.

I have included in this genus three species of which I know nothing—55. *Pytelia capistrata,* Hartl.; 58. *Estrelda salvatieri,* Rochebrune; and 66. *Fringilla viridis,* Vieill.

Key to the Species.

a. Rump and upper tail-coverts never blue.
a^1. Bill: both mandibles blackish. Rump and upper tail-coverts red.
a^2. General plumage grey. No black on head. Tail shorter.
a^3. Tail red .... 48. *E. cærulescens.*
b^3. Tail black.
b^4. Abdomen and under tail-coverts blacker.......................... 49. *E. perreini.*
c^4. Abdomen and under tail-coverts greyer .... Subsp. 50. *E. incana.*
b^2. General plumage not so grey. With some black on the head. Tail longer.
d^3. Crown ashy brown. Sides of the head black.
d^4. Under tail-coverts black .... 51. *E. erythronota.*
e^4. Under tail-coverts white .... 52. *E. charmosina.*
e^3. Crown black. Sides of the head not black.
f^4. Mantle grey, barred with black. Flanks red .... 53. *E. atricapilla.*
g^4. Mantle olive-brown. No red on breast .... 54. *E. nonnula.*
55. *E. capistrata.*
b^1. Bill: upper mandible black, lower one red. Rump and upper tail-coverts red.
h^2. Abdomen and under tail-coverts less yellow .... 56. *E. dufresnii.*
h^3. Sides of the head and upper throat black .... *E. dufresnii,* ♂.
i^3. Sides of the head grey, upper throat white .... *E. dufresnii,* ♀.
i^2. Abdomen and under tail-coverts yellower.
j^3. Rump redder. Throat whiter .... 57. *E. quartinia.*
k^3. Rump more orange-red. Throat greyer 58. *E. salvatieri.*
c^1. Bill: both mandibles orange-red.
l^2. With no crimson band through the eye, contrasting with the cheeks and ear-coverts. Rump and upper tail-coverts red.
l^3. Sides of the head grey .... 59. *E. paludicola.*
m^3. Sides of the head orange .... 60. *E. melpoda.*
m^2. With a crimson band through the eye,

contrasting strongly with the surrounding plumage.

n^3. Rump and upper tail-coverts brown, finely barred with black. Under tail-coverts black.

n^4. With no red shade on any of the upper parts, under tail-coverts entirely black .... 61. *E. astrild.*

o^4. Upper parts, especially the rump, slightly shaded with red. The throat, flanks, and under tail-coverts also washed with red. Subsp. 62. *E. rhodopyga.*

o^3. Rump and upper tail-coverts uniform black. Under tail-coverts white.

p^4. Smaller. Breast shaded with pink. Culmen and gonys not black .... 63. *E. cinerea.*

q^4. Larger. Breast not shaded with pink. Culmen and gonys black .... 64. *E. rufibarba.*

p^3. Rump and upper and under tail-coverts red. Breast yellow, with the sides olive barred with yellow .... 65. *E. subflava.*

66. *E. viridis.*

b. Rump and upper tail-coverts blue.

r^1. Blue portions of plumage ultramarine.

r^2. Upper throat black. Breast cinnamon .. 67. *E. granatina.*

s^2. Upper throat cinnamon. Breast blue.... 68. *E. ianthinogastra.*

s^1. Blue portion of the plumage verditer blue. Throat the same colour as the rump .... 69. *E. angolensis.*

48. ESTRELDA CÆRULESCENS.

Bengali gris-bleu, Vieill. Ois. Chant. 1805, p. 27, pl. 8.

Fringilla cærulescens, Vieill. N. D. xii. 1817, p. 176.

Estrelda cærulescens, Swains. B. W. Afr. i. 1837, p. 195.

Lagonosticta cærulescens, Cab. Mus. Hein. i. 1851, p. 171.

Habropyga cærulescens, Reichb. Singvög. 1861, p. 12, pl. 2. figs. 14, 15.

Habropyga fimbriata, Reichb. t. c. pp. 12, 49, pl. 18. figs. 165, 166.

Hab. W. Afr., Casamanse and Senegambia.

49. ESTRELDA PERREINI.

Fringilla perreini, Vieill. N. D. xii. 1817, p. 179, Congo.

Estrelda melanogastra, Swains. B. W. Afr. i. 1837, p. 194.

Estrelda perreini, Hartl. Orn. W.-Afr. 1857, p. 143, " Cassamanse (Verr.) " ? ; ? Rochebrune, Faun. Sénégamb. 1884, p. 254, nec pl. 21. fig. 2.

Pytelia perreini, F. & H. Vög. Ostafr. 1870, p. 447, note.

Habropyga perreini, Reichen. J. f. O. 1877, p. 29, Loango.

Hab. W. Afr., Congo and Loango Coast.

The occurrence of this species at Casamanse and Senegambia is fairly open to doubt. The figure referred to this bird by Rochebrune (*l. c.*) cannot apply to this species, for it differs in having the upper back red, like the rump, instead of grey, and the lower mandible pink instead of slaty grey. If it is a correct picture, the specimen from which it was taken must belong to a species new to science.

50. Subsp. ESTRELDA INCANA.

Estrelda incana, Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1850, p. 98, Caffraria.

Habropyga natalensis, Cab. Mus. Hein. i. 1851, p. 170, Natal.

Estrelda cærulescens, Licht. Nomencl. 1857, p. 48 (part), Mosambique.

Habropyga incana, Reichb. Singvög. 1861, p. 12.

Fringilla cærulescens, Bianc. (nec Swains.) Spec. Zool. Mosamb. fasc. xviii. 1867, p. 326.

Pytelia incana, F. & H. Vög. Ostafr. 1870, p. 446.

Hab. S.E. Afr., from Mosambique to Natal.

a, ♂. October, Durban (*Shelley Mus.*).

51. ESTRELDA ERYTHRONOTA.

Astrild à moustaches noires, Vieill. Ois. Chant. 1805, p. 37, pl. 14.

Fringilla erythronota, Vieill. N. D. xii. 1817, p. 182.

Estrelda lipiniana, Smith, Rep. Exped. Expl. Centr. Afr. 1836, p. 49, N.E. of Kurrichaine.

Estrelda erythronota, Gray & Mitchell, Gen. B. ii. 1849, p. 368, pl. 90. fig. 1.

Habropyga erythronota, Cab. Mus. Hein. i. 1851, p. 169.

Estrelda lipiniana, Strickl. & Sclat. Contr. Orn. 1852, p. 150.

Hab. E. and S. Afr.: southward from Ngaruk in Masai-land, about 4° S. lat., to the Transvaal, and from thence to Great Namaqua, Damara, and Lake Ngami.

a, ♂. November, Omaruru. *b*, ♂. July, Objimbinque. *c*, ♀. July, Damara (*Shelley Mus.*). The female only differs in being slightly duller than the male.

52. **Estrelda charmosina.**

Habropyga charmosina, Reichen. J. f. O. 1881, p. 333, Berbera.

Hab. E. Afr.: Berbera, about 10° N. lat.

53. **Estrelda atricapilla.** (Plate IX. fig. 1.)

Estrelda atricapilla, J. & E. Verr. Rev. et Mag. Zool. 1851, p. 421, Gaboon.

Hab. W. Afr.: confined to the Gaboon.

54. **Estrelda nonnula.**

Astrilda nonnula, Hartl. J. f. O. 1883, p. 435, Kudurma (Emin Bey).

Hab. E. Afr.: Upper White Nile, south of 5° N. lat.

55. **Estrelda capistrata.**

Pytelia capistrata, Hartl. J. f. O. 1861, p. 259, Bissao.

Hab. W. Afr., Bissao.

Note. This species is only known to me by Dr. Hartlaub's following original description:—"Supra olivaceo-viridis; capite, collo corporeque subtus cinereis; gula circumscripte nigra; rostro nigro. Long. circa 4''."

56. **Estrelda dufresnii.**

Fringilla dufresnii, Vieill. N. D. xii. 1817, p. 181, Hab.?

Fringilla erythronotus, Temm. MS., Vieill. t. c. p. 243, Caffraria.

Fringilla melanotis, Temm. Pl. Col. 1823, pl. 221. fig. 1.

Estrelda neisna, Licht. Nomencl. 1854, p. 48 (no descr.), Caffraria.

Estrelda melanotis, Gray & Mitchell, Gen. B. ii. 1849, p. 368.

Estrelda dufresnii, Gray & Mitchell, t. c. p. 369.

Estrelda (*Neisna*) *dufresnii*, Bp. Consp. i. 1850, p. 460.

Estrelda melanogenys, Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1850, p. 97, Natal.

? *Estrelda quartinia*, Bocage, Orn. Angola, 1881, p. 360, Huilla, Biballa.

Ortygospiza dufresnii, Butler, Feilden, & Reid, Zoologist, 1882, p. 300.

Hab. S. Afr.; south of the Zambesi and Quanza rivers.

a, ♂. October, Durban. *b*, ♂. January, Knysna (*Shelley Mus.*).

57. Estrelda quartinia.

Estrelda (*Neisna*) *quartinia*, Bp. Consp. i. 1850, p. 461, Abyssinia.

Fringilla (*Estrelda*) *flaviventris*, Heugl. Syst. Uebers. 1856, p. 40. no 399.

Estrelda quartinia, Hartl. Orn. W.-Afr. 1857, p. 142, note.

Coccopygia quartinia, Reichb. Singvög. 1861, p. 23.

Estrelda ernesti, Heugl. J. f. O. 1862, p. 29, Keren.

Habropyga ernesti, Heugl. Orn. N.O.-Afr. 1871, p. 607, pl. 18. fig. *b*.

Habropyga quartinia, Heugl. t. c. p. 608.

Coccopygia quartini, Heugl. t. c. App. 1873, p. cxxxvii.

Coccopygia ernesti, Heugl. l. c.

Hab. N.E. and W. Afr.; from Abyssinia to Senegambia.

58. Estrelda salvatieri.

Estrelda salvatieri, Rochebrune, Faun. Sénégamb. 1884, p. 252, pl. 21. fig. 1.

Hab. W. Afr., Senegambia.

E. salvatieri is only known to me from M. Rochebrune's description and figure.

59. Estrelda paludicola.

Estrelda paludicola, Heugl. J. f. O. 1863, p. 166, Gazal river.

Habropyga paludicola, Heugl. J. f. O. 1868, pl. 1. fig. 2; Cab. J. f. O. 1885, p. 464, Angola (spec. exam.).

Hab. N.E. and W. Afr. Upper White Nile from the Gazal river to Lado, between 5° and 10° N. lat., and Angola.

a. January, Lado (*Emin Bey, Shelley Mus.*).

60. Estrelda melpoda.

Bengali à joues orangées, Vieill. Ois. Chant. 1805, p. 26, pl. 7.

Fringilla melpoda, Vieill. N. D. xii. 1817, p. 177.

Estrelda melpoda, Gray & Mitchell, Gen. B. ii. 1849, p. 369.

Fringilla lippa, Licht. MS. Mus. Berol., fide Bp. Consp. i. 1850, p. 460.

Melpoda lippa, Reichb. Singvög. 1861, p. 26, pl. 7. figs. 62–64.

Habropyga melpoda, Cab. J. f. O. 1885, p. 464, Angola.

Hab. W. Afr., from Angola to Senegambia.

a. January, Cape-Coast Castle (*Shelley*).

61. Estrelda astrild.

Loxia astrild, Linn. S. N. i. 1766, p. 303.

Astrild, Vieill. Ois. Chant. 1805, p. 35, pl. 12.

Fringilla astrild, Vieill. N. D. xii. 1817, p. 232.

Fringilla undulata, Pall. "Adumbrat. p. 143," fide Giebel.

Estrelda astrild, Swains. Zool. Journ. iii. 1827, p. 349.

Estrelda cærulescens, Rüpp. (nec V.) Neue Wirb. 1835–40, p. 101.

Estrelda rubriventris, Des Murs, in Lefebvre's Voy. Abyss. 1845–50, p. 172.

Habropyga astrild, Cab. Mus. Hein. i. 1851, p. 169.

Estrelda occidentalis, Fraser, in Jard. Contr. Orn. 1851, p. 156.

Astrilda undulata, Reichb. Singvög. 1861, p. 9, pl. 2. figs. 7–9.

Astrilda rubriventris, Reichb. t. c. p. 10, pl. 2. fig. 12.

Estrelda undulata, Reichen. J. f. O. 1877, p. 29.

Astrilda astrild, Holub & Pelz. Beitr. Orn. Südafr. 1882, p. 126.

Habropyga minor, Cab. J. f. O. 1878, p. 229, Voi river in E. Afr.

Hab. The whole of Africa south of about 16° N. lat. and the surrounding islands, as the Comoro, Madagascar, Réunion, Mauritius, St. Helena, Fernando Po.

a, ♂. May, Lado. *b*. June. *c*. July, Natal. *d*. January, Ceres, in Cape Colony. *e*. April, St. Helena (*Shelley Mus.*).

Subsp. 62. ESTRELDA RHODOPYGA.

? *Astrild à ventre-rouge*, Vieill. Ois. Chant. 1805, p. 36, pl. 13 (cage-bird).

? *Fringilla rubriventris*, Vieill. N. D. xii. 1817, p. 184, Senegal.

? *Estrelda rubriventris*, Gray & Mitchell, Gen. B. ii. 1849, p. 369.

Estrelda rhodopyga, Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1850, p. 126, Senaar.

Estrelda rhodoptera, " Sundev. MS. Mus. Holm.," fide Bp. Consp. i. 1850, p. 459.

Habropyga rhodoptera, Cab. Mus. Hein. i. 1851, p. 169, note.

Habropyga "frenata, Ehr. MS.," Cab. l. c.

Estrelda effrenata, Licht. Nomencl. 1854, p. 48.

Estrelda leucotis, Heugl. J. f. O. 1862, p. 29, Keren.

Estrelda frenata, Heugl. J. f. O. 1868, p. 8.

Habropyya rhodopyga, Finsch, Trans. L. S. vii. 1869, p. 266.

Hab. N.E. and W. Afr. In N.E. Africa, Abyssinia and Senaar; and in W. Africa, Landana and ? Senegal.

a. Lado. *b*. February, Landana (*Shelley Mus.*).

63. ESTRELDA CINEREA.

Bengali cendré, Vieill. Ois. Chant. 1805, p. 25, pl. 6.

Fringilla cinerea, Vieill. N. D. xii. 1817, p. 176.

? *Fringilla troglodytes*, Licht. Verz. Doubl. 1823, p. 26.

Estrelda cinerea, Rüpp. Neue Wirb. 1835–40, p. 101.

? *Estrelda troglodytes*, Bp. Consp. 1850, p. 459.

Habropyga cinerea, Cab. Mus. Hein. i. 1851, p. 169.

Astrilda cinerea, Reichb. Singvög. 1862, p. 9, pl. 2. figs. 10, 11.

Astrilda nigricauda, Reichb. t. c. p. 10, pl. 6. figs. 55, 56.

Estrelda melanopygia, Heugl. J. f. O. 1864, p. 251.

Hab. N.E. and W. Afr. In N.E. Africa from 15° to 5° N. lat., and in W. Africa from Gaboon to Senegambia.

64. ESTRELDA RUFIBARBA.

Fringilla rufibarba, Ehr. MS. in Mus. Berol., Arabia.

Fringilla buccalis, Ehr. MS. in Mus. Berol., Arabia.

Habropyga "*rufibarba*, Ehr.," Cab. Mus. Hein. i. 1851, p. 169.

Estrelda rufibarba, Heugl. J. f. O. 1868, p. 7.

Hab. S. Arabia and Abyssinia.

a. January, Lahej, in Arabia (*Brit. Mus.*).

65. ESTRELDA SUBFLAVA.

Fringilla subflava, Vieill. N. D. xxx. 1819, p. 575.

Fringilla sanguinolenta, Temm. Pl. Col. 1823, pl. 221. fig. 2.

Estrelda sanguinolenta, Swains. B. W. Afr. i. 1837, p. 190.

Amadina sanguinolenta, Gray & Mitchell, Gen. B. ii. 1849, p. 370, pl. 30. figs. 2, 3.

Estrelda (*Neisna*) *subflava*, Bp. Consp. i. 1850, p. 460.

Sporæginthus subflava, Cab. Mus. Hein. i. 1851, p. 170.

Estrelda subflava, Hartl. Orn. W.-Afr. 1857, p. 144.

Sporæginthus miniatus, Heugl. J. f. O. 1863, p. 167, Abyssinia.

Estrelda subflava orientalis, Heugl. J. f. O. 1868, p. 11.

Pytelia subflava, Russ, J. f. O. 1869, p. 78.

Habropyga subflava, Heugl. Orn. N.O.-Afr. 1871, p. 609.

Ortygospiza subflava, Butler, Feilden, & Reid, Zoologist, 1882, p. 300.

Pytelia sanguinolenta, Böhm, J. f. O. 1885, p. 69, Central Afr.

Hab. N.E., E., Central, S., and W. Afr. South from 15° N. lat. it ranges from the White Nile to the Gazal river, and has been met with in Central Africa towards Tanganyika. In South Africa it occurs in the Transvaal and Natal, and in West Africa from the Niger to Senegambia.

a. September. *b.* December, Natal (*Shelley Mus.*).

66. ESTRELDA VIRIDIS.

Bengali vert, Vieill. Ois. Chant. 1805, p. 22, pl. 4.

Fringilla viridis, Vieill. N. D. xii. 1817, p. 180.

Estrelda viridis, Bp. Consp. i. 1850, p. 460; Rochebrune, Faun. Sénégamb. 1884, p. 251.

Hab. W. Afr., Senegambia.

I have never seen a specimen, and have therefore merely entered the name in my "key to the genus." According to Vieillot's figure, *l. c.*, it has the bill and feet red; a red band through the eyes as in *E. astrild*; back, wings, and tail olive; cheeks, throat, and entire underparts grey, washed with very pale red, rather brighter toward the vent.

M. Rochebrune records it from six localities in Senegambia, but considers it rare. I can find no other instance of its having been met with since Vieillot's time.

67. Estrelda granatina.

Fringilla granatina, Linn. S. N. i. 1766, p. 319.

Loxia granatina, Daud. Traité Orn. ii. 1800, p. 446.

Granadin, Vieill. Ois. Chant. 1805, p. 40, pls. 17 ♂, 18 ♀.

Estrelda granatina, Chapm. Trav. S. Afr. ii. App. 1848, p. 402.

Estrelda (*Granatina*) *granatina*, Bp. Consp. i. 1850, p. 458.

Uræginthus granatinus, Cab. Mus. Hein. i. 1851, p. 171.

Mariposa granatina, Reichb. Singvög. 1861, p. 7, pl. 1. figs. 4, 5.

Hab. S. Afr., from Matabele and the Transvaal to Damara and Lake Ngami.

This species has been recorded by Hartlaub (Orn. W.-Afr. p. 144) from Angola (*Henderson*), and I have a note of a specimen from Angola (*Linnier*); but according to Bocage (Orn. Angola, p. 353) it is not known to him from either Angola or Benguela. In E. Africa it appears to be entirely replaced by *Estrelda ianthinogastra*, and I suspect that to that species belongs the *Uræginthus granatinus*, Rochebrune (Faun. Sénégamb. p. 255). As there is a large trade with Senegal in cage-birds, this species may have been naturalized there, but cannot, I think, ever have been indigenous.

68. Estrelda ianthinogastra.

Uræginthus granatinus, Cab. (nec Linn.) J. f. O. 1878, p. 229 (♂ or ♀ juv.), E. Afr.; ? Rochebrune, Faun. Sénégamb. 1884, p. 255, Gambia, Casamanse.

Uræginthus ianthinogaster, Reichen. J. f. O. 1879, p. 326, pl. 2. figs. 1, 2 (not good), Massa.

Hab. E. and ? W. Afr.: from Somali to Little Aruscha; possibly Gambia and Casamanse in W. Africa.

69. ESTRELDA ANGOLENSIS.

Blue-bellied Finch, Edw. Nat. Hist. B. 1743, pl. 131 (good), Angola.

Fringilla angolensis, Linn. S. N. i. 1766, p. 323, ex Edw.

Fringilla bengalus, Linn. loc. cit.

Loxia bengalus, Daud. Traité, ii. 1800, p. 435.

Loxia cyanogastra, Daud. loc. cit.

Maripose, Vieill. Ois. Chant. 1805, p. 23, pl. 5.

Estrelda bengala, Less. Traité Orn. 1831, p. 444.

Estrelda mariposa, Less l. c.

Estrelda phœnicotis, Swains. B. W. Afr. i. 1837, p. 192, pl. 14.

Estrelda (*Granatina*) *angolensis*, Bp. Consp. i. 1850, p. 458.

Uræginthus phœnicotis, Cab. Mus. Hein. i. 1851, p. 171.

Mariposa phœnicotis, Reichb. Singvög. 1861, p. 6, pl. 1. figs. 1, 1 *a*, 1 *b*, 2.

Pytelia phœnicotis, F. & H. Vög. Ostafr. 1870, p. 447.

Mariposa cyanogastra, Gurney in Anders. B. Damara, 1872, p. 179.

Estrelda cyanogastra, Sharpe, P. Z. S. 1873, p. 717.

Astrilda phœnicotis, Hartl. Abhandl. nat. Ver. Brem. vii. 1881, p. 103.

Uræginthus cyanogastra, Sharpe's ed. Layard, B. S. Afr. 1884, pp. 473, 850.

Hab. The whole of Africa south from about 15° N. lat.

The South-African birds form a race in which the ear-coverts are never red, but I can find no character for distinguishing the females. If these two races were separated, the southern bird should be referred to *Fringilla angolensis*, Linn., and the northern one to *Fringilla bengalensis*, Linn., which latter name would have to be superseded by *Estrelda mariposa*, Less., ex Vieill.

a, ♀. July, Bejook. *b*, ♀. June, Sobat. *c*. July, Swazi. *d*. September, Matabele (*Shelley Mus.*).

13. ORTYGOSPIZA.

Type.
1850. *Ortygospiza*, Sundev. Œfv. af Vet.-Ak.
Förh. Stockh. 1850, p. 98 . . . . *O. polyzona.*

I have not been able to examine a sufficient number of good specimens from N.E. Africa, and suspect that the two N.E.-African forms will be found to differ from the S.-African bird; if so, the species with the white round the eye will stand as *Ortygospiza fuscocrissa*, Heugl., for *Fringilla multizona* is nothing but an error in Des Murs's quotation from Temminck. The white circle round the eye is, however, no reliable character.

Key to the Species.

a. Chin white and a white band round the eye...... 70. *O. polyzona*.
b. With no white on the head..................... 71. *O. atricollis*.

70. ORTYGOSPIZA POLYZONA.

Fringilla polyzona, Temm. Pl. Col. 1823, pl. 221. fig. 3.

? "*Fringilla multizona*, Temm." (error), Des Murs, in Lefebvre's Voy. Abyss. 1840–45, p. 117.

? *Estrelda polyzona*, Des Murs, tom. cit. p. 173.

? *Amadina polyzona*, Rüpp. Syst. Uebers. 1845, p. 77.

Ortygospiza polyzona, Sundev. Œfv. af Vet.-Ak. Förh. Stockh. 1850, p. 98.

? *Ortygospiza fuscocrissa*, Hartl. J. f. O. 1863, p. 18, Dembea, Tigré.

? *Ortygospiza atricollis*, Heugl. Orn. N.O.-Afr. 1871, p. 598 (part.).

Hab. (N.E.?) S. and W. Afr. In Abyssinia and Shoa this, or probably a closely allied species, is found. It has not been recorded from E. Africa, and in S. and W. Africa it has only been mentioned from Matabele, Transvaal, Natal, and Angola.

a, ♀. June. *b*, ♀. October, Newcastle. *c*, ♀. July, Pinetown, Natal (*Shelley Mus.*). In specimen *c* there is no white on one side of the head, and only a few white feathers near the eye on the other side, otherwise the specimen is apparently adult.

71. ORTYGOSPIZA ATRICOLLIS.

Fringilla atricollis, Vieill. Enc. Méth. 1823, p. 990, Senegal.

Amadina lunulata, Temm. MS., Senegal, fide Hartl. Orn. W.-Afr. 1857, p. 148.

Amadina polyzona, Hartl. tom. cit. p. 148, part. (nec descr.).

Ortygospiza atricollis, Hartl. tom. cit. p. 274.

Hab. N.E. and W. Afr.: Bongo, Upper White Nile, Gaboon, Cape Lopez, Casamanse, and Senegal.

14. HYPOCHERA.

	Type.
1850. *Hypochera,* Bp. Consp. i. p. 450 . .	*H. chalybeata.*

I consider the present genus to contain only one species, varying slightly in size and considerably in the gloss, which shades from green, blue, and purple to almost dull black; but these slight differences do not appear to have any relation to their geographical distribution.

72. HYPOCHERA CHALYBEATA.

Black Linnet, Edwards, Gleanings, iii. 1764, p. 323, pl. 362. fig. 1 (good, blue gloss).

Fringilla chalybeata, P. L. S. Müll. S. N. Suppl. 1776, p. 166 (blue gloss).

Fringilla nitens, Gm. S. N. i. 1788, p. 909 (blue gloss).

Fringilla ultramarina, Gm. tom. cit. p. 927 (blue gloss).

Comba-sou, Vieill. Ois. Chant. 1805, p. 44, pl. 21 (blue gloss).

Loxigilla nitens, Less. Traité Orn. 1831, p. 444.

Amadina nitens, Swains. B. W. Afr. i. 1837, p. 199.

Fringilla funerea, De Tarragon, Rev. Zool. 1847, p. 180 (purple gloss).

Philæterus nitens, Strickl. P. Z. S. 1850, p. 218.

Hypochera nitens, Bp. Consp. i. 1850, p. 450.

Hypochera ultramarina, Bp. loc. cit.

Loxigilla melas, Verr. MS., fide Bp. loc. cit.

Vidua ultramarina, Licht. Nomencl. 1854, p. 49.

Hypochera ænea, Hartl. J. f. O. 1854, p. 115, Senegal (green gloss).

Hypochera chalybeata, Sharpe, Cat. Afr. B. 1871, p. 64.

Hypochera nigerrima, Sharpe, P. Z. S. 1871, p. 133, Angola (purple gloss).

Hypochera purpurascens, Reichen. J. f. O. 1883, p. 221, Usagua, Lindi (purple gloss).

Hab. The whole of Africa south from about 16° N. lat.

a. February. *b.* April, Natal (*Shelley Mus.*).

15. VIDUA.

		Type.
1800.	*Vidua,* Cuv. Anat. Comp. Table Ois.	*V. principalis.*
1850.	*Videstrelda,* Lafresn. Rev. et Mag. Zool. 1850, p. 325	*V. regia.*
1850.	*Steganura,* Reichb. Syst. Nat. pl. 76	*V. paradisea.*
1850.	*Tetrænura,* Reichb. tom. cit. pl. 78	*V. regia.*
1882.	*Linura,* Reichb. Orn. Centralbl. 1882, p. 91	*V. fischeri.*

The genus *Vidua* appears to me to differ from *Hypochera* only in having the two or four central tail-feathers much elongated. If I divided the genus *Vidua,* I should require five genera for the reception of the six species.

Vidua hypocherina and *V. nitens,* of which I have examined the types, are identical.

V. principalis was divided by Dr. Hartlaub into two species, one with the chin white, and the other with it black; but every intermediate form, from one black feather to twenty or more on the chin, I have met with.

V. superciliosa is only known to me by the description and fine illustration given by Vieillot from a specimen in Temminck's collection. This species has, I believe, never since been met with. It is the only *Vidua* ever described with only two elongated tail-feathers, and these are white and apparently perfectly similar to those of a Flycatcher of the genus *Tchitrea.* The type is not in the Paris Museum, and may, I think, have been found to be a made-up bird and destroyed. So much doubt do I feel with regard to this bird, that I think until it is rediscovered, or the type carefully examined, it might with advantage be omitted from the African list.

V. paradisea has generally been divided into two species—the typical race from W. Africa, and *Vidua verreauxi*, Cass., from E. and S. Africa; but their differences I consider of too trivial a nature to be recognized with any advantage. The only character I can find for *V. verreauxi* is the absence of any chestnut shade on the hind neck. There is no constant difference in their measurements. In six specimens in the British Museum from the Gambia, five have the chestnut shade on the back of the neck, and one is without that shade.

Key to the Species.

a. Bill red.
  *a*¹. Elongated tail-feathers of moderate breadth throughout their length. Breast black or white in adults.
    *a*². With four elongated tail-feathers, black.
      *a*³. Entire plumage glossy greenish black .. 73. *V. hypocherina.*
      *b*³. Underparts white .... 74. *V. principalis.*
    *b*². With two elongated tail-feathers, white .. 75. *V. superciliosa.*
  *b*¹. Elongated tail-feathers very narrow. Underparts buff.
    *c*². Four centre tail-feathers white and equally narrow throughout their length. Crown buff. Neck and sides of the head black .. 76. *V. fischeri.*
    *d*². Centre tail-feathers black and extremely narrow, widening out near their ends. Crown black. Neck, ear-coverts, and throat buff .... 77. *V. regia.*
b. Bill black. Four elongated tail-feathers very broad, narrowing towards their ends. Entire head and throat black .... 78. *V. paradisea.*

73. Vidua hypocherina.

Vidua hypocherina, Verr. Rev. et Mag. Zool. 1856, p. 260, pl. 16 (bad), W. Afr. (type exam.).

Vidua splendens, Reichen. Orn. Centralbl. 1879, p. 180, Kiparaja (type exam.); Forbes, P. Z. S. 1880, p. 475, pl. 47. fig. 1 (good).

Hab. E. and W. Africa: E. Africa between 1° and 7° S. lat. from Kiparaja to Ugogo; and in W. Africa, Casamanse and Gambia.

74. VIDUA PRINCIPALIS.

Long-tailed Sparrow, Edwards, Nat. Hist. B. 1760, fig. 2 (good, in moult with long tail, brown plumage).

Emberiza serena, Linn. S. N. i. 1766, p. 312 (not in full plumage).

Emberiza vidua, Linn. loc. cit. (in full plumage).

Emberiza principalis, Linn. loc. cit., ex Edw.

Veuve Dominicaine, Vieill. Ois. Chant. 1805, p. 61, pl. 36 (good, white chin).

Vidua principalis, Cuv. Règne An. i. 1817, p. 388.

Vidua serena, Cuv. loc. cit.

Fringilla serena, Vieill. N. D. xii. 1817, p. 216.

Fringilla principalis, Vieill. tom. cit. p. 219.

Vidua erythrorhyncha, Swains. B. W. Afr. i. 1837, p. 176, pl. 12 (good, black chin).

Estrelda serena, Des Murs, in Lefebvre's Voy. Abyss. 1845–50, p. 113

Videstrelda serena, Lafr. Rev. et Mag. Zool. 1850, p. 325.

? *Vidua fuliginosa,* Licht. Nomencl. 1854, p. 49.

Vidua decora, Hartl. Ibis, 1862, p. 240, Angola (type exam., black chin).

Hab. Africa, generally south from about 16° N. lat.

a, ♂. July, Bejook. *b,* ♂, full plumage. December. *c,* ♂. October, nearly full plumage. *d,* ♂. September, half moult. *e,* ♂. June, full moult, Natal. *f.* March, full moult, Cape-Coast Castle (*Shelley Mus.*).

75. VIDUA SUPERCILIOSA.

"*Fringilla superciliosa,* Temm.," Vieill. N. D. xii. p. 216 (ex Temm.), 1817; Vieill. & Oud. Gal. Ois. i. 1825, p. 73, pl. 61.

Vidua superciliosa, Griff. ed. Cuv. Règne An. ii. 1829, p. 150.

Videstrelda superciliosa, Lafr. Rev. et Mag. Zool. 1850, p. 325.

Hab. Africa.

76. VIDUA FISCHERI.

Linura fischeri, Reichen. Orn. Centralbl. 1882, p. 91, Usegua (type exam.).

Vidua (*Linura*) *fischeri,* Reichen. J. f. O. 1882, p. 350, pl. ii. fig. 1, ♂ ♀.

Hab. E. Afr., Usegua.

77. VIDUA REGIA.

Emberiza regia, Linn. S. N. i. 1766, p. 313.

Veuve à quatre brins, Vieill. Ois. Chant. 1805, p. 59, pls. 34 (ad. good), 35 (juv.).

Vidua regia, Cuv. Règne An. i. 1817, p. 388.

Fringilla regia, Vieill. N. D. xii. 1817, p. 220.

Videstrelda regia, Lafr. Rev. et Mag. Zool. 1850, p. 325.

Tetrænura regia, Reichb. Singvög. 1861, p. 61, pl. 26. figs. 217, 218.

Estrelda carlelita, Hartl. Ibis, 1868, p. 46 (Natal).

Hab. S. and W. Africa. In S. Africa it ranges from Matabele and the Transvaal to Damara and Benguela. In W. Africa it has probably been introduced; for M. Rochebrune is the only person who has recorded it from Casamanse and Senegambia, where, he states, it is rare.

78. VIDUA PARADISEA.

Emberiza paradisæa, Linn. S. N. i. 1766, p. 312, Angola.

Veuve à collier d'or, Vieill. Ois. Chant. 1805, p. 63, pls. 37 (ad. good), 38 (juv. good).

Fringilla paradisea, Vieill. N. D. xii. 1817, p. 213.

Vidua paradisea, Cuv. Règne An. i. 1817, p. 388.

Vidua verreauxi, Cass. Pr. Ac. Philad. 1850, June, p. 56, Abyssinia.

Steganura paradisea, Bp. Consp. i. 1850, p. 449.

Vidua sphænura, Verr. MS., fide Bp. loc. cit. July.

Steganura sphænura, Bp. loc. cit.

Videstrelda paradisea, Lafr. Rev. et Mag. Zool. 1850, p. 325.

Steganura paradisea, var. *australis,* Heugl. Faun. Roth. Meeres, 1855, no. 161, fide Heugl. 1871.

Steganura verreauxi, Sclat. P. Z. S. 1864, p. 110.

Vidua paradisea orientalis, Heugl. Orn. N.O.-Afr. 1871, p. 583.

Hab. The whole of Africa south from about 17° N. lat., except in the extreme south, as Natal, Cape Colony, and Namaqualand.

16. COLIUSPASSER.

		Type.
1831.	*Oryx,* Less. (nec Oken, 1816, Mam.) Traité, Orn. p. 437	*C. capensis.*
1837.	*Euplectes,* Swains. (nec *Euplectus,* Leach, 1817) B. W. Afr. i. p. 180	*C. capensis.*
1835–40.	*Coliuspasser,* Rüpp. Neue Wirb. p. 98, pl. 36. fig. 2	*C. laticaudus.*
1847.	*Penthetria,* Cab. Arch. Naturges. 1847, p. 331	*C. laticaudus.*
1849.	*Coliustruthus,* Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1849, p. 158	*C. laticaudus.*
1849.	*Chera,* Gray, Gen. B. ii. p. 355	*C. procne.*
1850.	*Orynx,* Reichb. Syst. Nat. p. 76	*C. capensis.*
1850.	*Xanthomelana,* Bp. Consp. i. p. 447	*C. capensis.*
1850.	*Urobrachya,* Bp. loc. cit.	*C. axillaris.*
1850.	*Pentheria,* Bp. loc. cit.	*C. laticaudus.*
1861.	*Niobe,* Reichb. Singvög. p. 61, pl. 26. figs. 219, 220	*C. ardens.*

Coliuspasser, although not a correctly classical name, cannot, I maintain, be superseded by *Penthetria,* proposed as an amendment more than seven years later.

The present genus, as I have employed it, contains a very well-marked group of species with many striking characters in common, and not differing in any more essential points than in the length of the tail in adult males. This genus more nearly approaches *Pyromelana* than *Vidua,* the winter plumages in this and the next genus being almost identical in colouring.

The members of the present genus appear peculiarly liable to melanism, and I consider it proved that the *Vidua concolor*, Cass., is nothing but a black variety of *C. ardens*, for in the Berlin Museum I have examined three specimens from Malengue, in Angola—one entire black, labelled *Penthetria concolor*; another is the typical red-collared *C. ardens*; and the third is exactly intermediate, the collar being traced in dull red. Other varieties of this species I have seen with the collar orange.

There is at present in the Colonial and Indian Exhibition a specimen of *C. axillaris*, in which the chestnut on the wings is reduced to only a few markings. The amount of rufous is not an absolutely constant character, for there is a specimen in the British Museum from Mombas in which the wing is unrecognizable from that of the Natal bird. I therefore consider *C. phœniceus*, Heugl., which I once described as *Urobrachya zanzibarica*, as only a variety with no positively constant characters, but the commonest form of this species north of the Zambesi.

I have based my divisions of *C. capensis* with a large and small race, and *C. xanthomelas* as a subspecies, upon the colouring of the under surface of the quills, in the legs being paler and the thighs brown in *C. capensis*, while in *C. xanthomelas* the thighs are black; but this latter character is subject to modifications. The Camaroons bird, type of *Euplectes phœnicomerus*, Gray, belongs to the small S.-African form. As the Camaroons is out of a natural range for this bird and no other specimens have been recorded from W. Africa, I should look upon it as possibly an escaped cage-bird.

Key to the Species.

a. Under wing-coverts entirely black. Tail very long.
  a^1. Least series of wing-coverts scarlet, median series white .... 79. *C. procne.*

b^1. Entire wings black.
  b^2. With or without a red or orange collar across the base of the throat .... 80. *C. ardens.*
  c^2. Crown, nape, and a broad collar red .... 81. *C. laticaudus.*
b. Under wing-coverts black, with the outer portion yellowish fawn-colour. Least wing-coverts orange, median series cinnamon .... 82. *C. hartlaubi.*
c. Under wing-coverts not black, with some bright colours on the wing-coverts.
  d^1. Scapulars yellow. Lower back black.
    d^2. Back between the scapulars black ...... 83. *C. macrocercus.*
    e^2. Entire mantle yellow .... 84. *C. macrurus.*
  e^1. Entire back black.
    f^2. With a conspicuous white basal portion to the primaries.
      f^3. Least wing-coverts bright yellow .... 85. *C. albonotatus.*
      g^3. Least wing-coverts chestnut .... 86. *C. eques.*
    g^2. With no white on the quills. Tail of moderate length and rounded, with some chestnut on the wings.
      h^3. Lesser wing-coverts scarlet.......... 87. *C. axillaris.*
      i^3. Lesser wing-coverts chrome-yellow.... 88. *C. bocagii.*
  f^1. Upper back and upper tail-coverts black, remainder of the back yellow.
    h^2. Legs pale brown; under surface of the quills paler, with distinct buff inner margins; upper surface of the wing-feathers more broadly edged with pale brown; thighs browner.............. 89. *C. capensis.*
    i^2. Legs dark brown; under surface of the quills darker, with or without indications of narrow brown inner margins to the quills; upper surface of the wing-feathers less broadly edged with pale brown; thighs blacker .... 90. *C. xanthomelas.*

79. COLIUSPASSER PROCNE.

Emberiza procne, Bodd. Tabl. Pl. Enl. 1783, p. 39. no. 635.

Loxia caffra, Gm. S. N. i. 1788, p. 858.

Emberiza longicauda, Gm. tom. cit. p. 884.

Veuve à epaulettes, Vieill. Ois. Chant. 1805, p. 66, pls. 39 ♂, 40 ♀ (good).

Fringilla longicauda, Vieill. N. D. xii. 1817, p. 218.

Vidua longicauda, Cuv. Règne An. i. 1817, p. 388.

Fringilla caffra, Licht. Verz. Doubl. 1823, p. 22.

Vidua phœnicopterus, Swains. Class. B. ii. 1837, p. 112, pl. 161.

Chera procne, Gray, Gen. B. ii. 1849, p. 355.

Penthetria longicauda, Licht. Nomencl. 1854, p. 49.

Chera caffra, Reichb. Singvög. 1861, p. 65, pl. 29. figs. 230–232.

Hab. S. Africa: Transvaal, Natal, eastern portion of Cape Colony, and Benguela.

80. COLIUSPASSER ARDENS.

Emberiza ardens, Bodd. Tabl. Pl. Enl. 1783, p. 39, no. 647.

Emberiza signata, Scop. Faun. et Flor. Insub. 1786, p. 95, ex Sonn.

Emberiza panayensis, Gm. S. N. i. 1788, p. 885.

Vidua lenocinia, Less. Traité Orn. 1831, p. 437, Cape (in partial moult).

Vidua torquata, Less. Compl. Buff. viii. 1837, p. 278, Cape (with a yellow collar).

Vidua rubritorques, Swains. B. W. Afr. i. 1837, p. 174, Senegambia.

Vidua concolor, Cass. Pr. Ac. Philad. 1848, p. 66, Africa (black var.); id. Journ. Ac. Philad. 1849, p. 241, pl. 30. fig. 1.

Vidua ardens, Gray & Mitchell, Gen. B. ii. 1849, p. 355.

Coliustruthus concolor, Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1849, p. 158.

Penthetria rubritorques, Bp. Consp. i. 1850, p. 448.

Penthetria concolor, Bp. loc. cit.

Penthetria ardens, Cab. Mus. Hein. i. 1851, p. 177.

Niobe ardens, Reichb. Singvög. 1861, p. 61, pl. 26. figs. 219, 220.

Penthetria hartlaubi, Cab. (nec Bocage, 1881) J. f. O. 1883, p. 318, Wakkola (Emin Bey, type exam.).

Coliustruthus ardens, Finsch, J. f. O. 1885, p. 135.

Hab. S.E. and W. Africa. On the eastern side it ranges from about 5° N. lat. to Natal and the eastern portion of Cape Colony, and has been recorded on the West Coast from Angola, Sierra Leone, and Senegambia.

81. COLIUSPASSER LATICAUDUS.

Fringilla laticauda, Licht. Verz. Doubl. 1823, p. 24, Nubia.

Coliuspasser torquatus, Rüpp. Neue Wirb. 1835–40, pp. 98, 101, pl. 36. fig. 2, Simien.

Vidua laticauda, Gray & Mitchell, Gen. B. ii. 1849, p. 355.

Penthetria laticauda, Bp. Consp. i. 1850, p. 448.

Coliuspasser laticauda, Blanf. Geol. & Zool. Abyss. 1870, p. 405.

Hab. N.E. and E. Africa, from about 15° N. to 4° S. lat.; Abyssinia, Shoa, Kilimanjaro.

82. COLIUSPASSER HARTLAUBI.

Penthetria hartlaubi, Bocage, Orn. Angola, 1881, p. 341, Caconda.

Hab. S. Africa; Caconda in Benguela.

83. COLIUSPASSER MACROCERCUS.

Yellow-shouldered Oriole, Brown, Ill. Zool. 1776, p. 22, pl. 11 (good).

Fringilla macrocerca, Licht. Verz. Doubl. 1823, p. 24, note *d,* Nubia.

Coliuspasser flaviscapulatus, Rüpp. Neue Wirb. 1835–40, pp. 98, 101, Abyssinia (type exam.).

? *Coliuspasser macrurus,* Rüpp. Syst. Uebers. 1845, p. 77, Abyssinia.

Vidua macrocerca, Des Murs in Lefebvre's Voy. Abyss. 1845–50, p. 172.

Penthetria flaviscapulatus, Bp. Consp. i. 1850, p. 449.

Penthetria macroura, Cab. Mus. Hein. i. 1851, p. 176.

Hab. N.E. Africa, between 15° and 10° N. lat. Confined to Abyssinia.

a, ♂. July, N.E. Africa (*Brit. Mus.*).

84. Coliuspasser macrurus.

Loxia macroura, Gm. S. N. i. 1788, p. 845.

Loxia longicauda, Lath. (nec Gm.) Ind. Orn. i. 1790, p. 373.

Fringilla flavoptera, Vieill. Ois. Chant. 1805, p. 69, pl. 41 (good).

Fringilla chrysoptera, Vieill. N. D. xii. 1817, p. 214.

Penthetria macroura, Cab. Orn. Notiz. 1847, p. 331.

Vidua macroura, Gray & Mitchell, Gen. B. ii. 1849, p. 355.

Coliustruthus macrourus, Cass. Pr. Ac. Philad. 1859, p. 136.

Coliuspasser macroura, Bouvier, Cat. Marche, 1875, p. 24.

Hab. N.E., E., and W. Africa South from about 15° N. lat.; it ranges to Melindi on the east coast, and to the Quanza on the west.

85. Coliuspasser albonotatus.

Vidua albonotata, Cass. Pr. Ac. Philad. 1848, p. 65, Natal; id. Journ. Ac. Philad. 1849, p. 241, pl. 30. fig. 2.

Urobrachya albonotata, Bp. Consp. i. 1850, p. 448.

Penthetria albonotata, F. & H. Vög. Ostafr. 1870, p. 420.

Hab. S. and W. Africa: Shiré, Zambesi, Matabele, Transvaal, Natal, Benguela, Angola, Loanga Coast, and Gaboon.

a. Gaboon (*Brit. Mus.*).

86. Coliuspasser eques.

Vidua eques, Hartl. P. Z. S. 1863, p. 106, pl. 15, Kazeh (Speke).

Penthetria eques, F. & H. Vög. Ostafr. 1870, p. 420.

Urobrachya eques, Fisch. Zeitsch. ges. Orn. 1884, p. 326.

Hab. E. Africa, between 5° N. lat. and 5° S. lat.; from Lado to Kitui.

87. Coliuspasser axillaris.

Vidua, sp.?, Smith, S. Afr. Quart. Journ. 1831, p. 12.

Vidua axillaris, Smith, Ill. Zool. S. Afr. 1838, pl. 17 (good), Caffraria.

Urobrachya axillaris, Bp. Consp. i. 1850, p. 447, S. Africa.

Coliuspasser phœniceus, Heugl. Syst. Uebers. 1856, p. 39, no. 394, Sobat R. (no descr.).

Urobrachya axillaris, Antin. Cat. 1864, p. 68, N.E. Africa.

Penthetria axillaris, F. & H. Vög. Ostafr. 1870, p. 421.

Urobrachya zanzibarica, Shelley, P. Z. S. 1881, p. 586, Lamu, Malindi, Pangani.

Urobrachya phœnicea, Cab. J. f. O. 1882, p. 122.

Hab. N.E., E., and S. Africa. Southward from about 9° N. lat. to Mosambique, also Natal and the eastern portion of Cape Colony.

The N.E. and E. African may generally, but not always, be distinguished from the S. African birds.

a, ♂ ad. Bombalike, near Mombas (*Brit. Mus.*). In this specimen the wing is unrecognizable from that of the S. African bird; but the bill is slightly stouter and rougher.

88. Coliuspasser bocagii.

Urobrachya axillaris, Sharpe (nec Smith), P. Z. S. 1869, p. 566, Colombo, in Angola (spec. exam.).

Urobrachya bocagei, Sharpe, Cat. Afr. B. 1871, p. 63, Angola, Mossamedes (types exam.).

Penthetria bocagei, Bocage, Orn. Angola, 1881, p. 343, Benguela, Quanza.

Urobrachya affinis, Cab. Orn. Centralbl. 1881, p. 183, Hab.? (type exam.).

Urobrachya mechowi, Cab. loc. cit., Angola (type exam.).

Hab. S. and W. Africa. Confined to Benguela and Angola.

89. Coliuspasser capensis.

Loxia capensis, Linn. S. N. i. 1766, p. 306, Cape.

Loxia nævia, Gm. S. N. i. 1788, p. 845 (in moult).

Coccothraustes capensis, Vieill. N. D. xiii. 1817, p. 527.

Fringilla phalerata, Licht. Verz. Doubl. 1823, p. 22, Cape.

Oryx capensis, Less. Traité Orn. 1831, p. 438.

Euplectes capensis, Hartl. Verz. Brem. 1844, p. 69.

Corythus capensis, Hahn & Küst. Vög. As. &c. Lief. xiv. 1850, pl. 4.

Orynx approximans, Cab. Mus. Hein. i. 1851, p. 177, S. Afr. (small var.).

Oryx minor, Reichb. Singvög. 1861, p. 59, pl. 24. figs. 210, 211, S. Afr. (small var.).

Euplectes phœnicomerus, Gray, Ann. & Mag. Nat. Hist. ser. 3, vol. x. p. 444 (1862), Camaroons (type exam.).

Ploceus capensis, Pelz. Reise Novara, Vög. 1865, p. 90.

Euplectes xanthomelas, Gurney (nec Rüpp.), Ibis, 1868, p. 51, Natal.

Pyromelana capensis, Sharpe's ed. Layard, B. S. Afr. 1884, pp. 463, 849.

Hab. The whole of South Africa and the Camaroons in W. Africa, the larger race being apparently confined to Cape Colony.

90. COLIUSPASSER XANTHOMELAS.

Euplectes xanthomelas, Rüpp. Neue Wirb. 1835–1840, p. 94, Abyssinia; id. Syst. Uebers. 1845, p. 76, pl. 28 (good).

Euplectes stictus, Heugl. Syst Uebers. 1865, p. 39.

Pyromelana capensis, F. & H. Vög. Ostafr. 1870, p. 416 (part.), E. Afr.

Euplectes capensis, Heugl. Orn. N.O.-Afr. 1871, p. 573.

Orynx xanthomelas, Cab. J. f. O. 1878, p. 231.

Oryx xanthomelas, Fisch. & Reichen. J. f. O. 1879, p. 351.

Oryx capensis, Fisch. J. f. O. 1885, p. 134.

Hab. N.E., E., S., and W. Afr. In E. Africa from about 15° N. lat. to about 20 S. lat.; Abyssinia to Matabele Land. There is a very typical specimen in the British Museum labelled Hope Fontein, near Gubelewaya (*Oates*).

17. PYROMELANA.

		Type.
1831.	*Pyromelana,* Bp. Saggio Distr. Met. An. Vert. 1831, p. 141	*P. orix.*
1861.	*Taha,* Reichb. Singvög. p. 73	*P. taha.*

This is a very well-defined compact genus, composed of thirteen species, of which ten are very strongly marked; the other three, *P. scioana,* Salvad., *P. taha,* Smith, and *P. sticta,* Heugl. (= *P. ladoensis,* Reichen.), have been frequently confounded, but are, I consider, undoubtedly good species.

To the surrounding genera, *Coliuspasser* and *Quelea,* they show a marked affinity in the colouring of their winter dress.

Key to the Species.

a. Under surface of the wings entirely black.
a^1. Crown, neck, and lower back orange-red; mantle reddish fawn-colour; upper half of throat black .... 91. *P. flammiceps.*
b^1. Front half of the crown black; mantle yellow; rump and upper tail-coverts brown; black of throat confined to chin................ 92. *P. gierowi.*
b. Under surface of the wings not black.
c^1. Entire neck red.
c^2. Upper and under tail-coverts and pale portion of the abdomen not red............ 93. *P. friederichsoni.*
d^2. Upper and under tail-coverts and pale portion of the abdomen red.
d^3. Chin and upper throat black .... 94. *P. orix.*
e^3. Chin and entire throat red.
e^4. Entire upper half of the head black .. 95. *P. franciscana.*
f^4. Black on upper half of the head confined to the forehead.............. 96. *P. nigrifrons.*
d^1. Crown and back half of the neck red; entire throat black .... 97. *P. nigriventris.*
e^1. Forehead and front of crown red: remainder of the head and neck black .... 98. *P. diademata.*
f^1. Entire head black; back orange-yellow .... 99. *P. aurea.*
g^1. Crown, lower back, and upper and under tail-coverts bright yellow.
g^2. With no yellow collar across the lower throat.
g^3. Larger: wing 2·8 inches; with no yellow on the chest .... 100. *P. scioana.*
h^3. Smaller: wing 2·5 to 2·2 inches; with a yellow patch on each side of the crop.
h^4. Larger: wing 2·4 to 2·5 inches; sides of the body between the crop-patch and thigh not mottled with yellow.. 101. *P. taha.*

i^4. Smaller: wing 2·2 inches; sides of the body between the crop-patch and thigh yellow, or mottled with yellow .... 102. *P. sticta.*

h^2. With a yellow collar across the crop .... 103. *P. afra.*

91. PYROMELANA FLAMMICEPS.

Euplectes flammiceps, Swains. B. W. Afr. i. 1837, p. 186, pl. 13, Senegal.

Oryx petiti, Des Murs, in Lefebvre's Voy. Abyss. 1845–50, p. 112.

Euplectes craspedopterus, Heugl. Syst. Uebers. 1856, p. 30, no. 383.

Euplectes flaviceps (laps. cal.), Hartl. P. Z. S. 1863, p. 106.

Euplectes pyrrhozana, Heugl. J. f. O. 1864, p. 247.

Pyromelana flammiceps, F. & H. Vög. Ostafr. 1870, p. 414.

Hab. N.E., E., S.?, and W. Afr., between about 15° N. lat. and 10° S. lat. From Abyssinia to Lindi on the east coast, and from the Quanza to Senegal on the west. ? Benguela (*Brit. Mus.*).

92. PYROMELANA GIEROWI.

Euplectes gierowii, Cab. Orn. Centralbl. 1880, p. 6, Quanza; id. J. f. O. 1880, p. 106, pl. 3. fig. 2.

Hab. W. Afr., Quanza in Angola.

93. PYROMELANA FRIEDERICHSONI.

Euplectes friederichsoni, Fisch. & Reichen. J. f. O. 1884, p. 54, Ngaruman.

Hab. E. Afr., Ngaruman.

94. PYROMELANA ORIX.

Grenadier, Edw. Nat. Hist. B. 1743, pl. 178 (fair).

Emberiza orix, Linn. S. N. i. 1766, p. 309, ex Edw.

Loxia orix, Daud. Traité Orn. ii. 1800, p. 377, Cape.

Loxie orix, Vieill. Ois. Chant. 1805, p. 100, pl. 66 (good).

Coccothraustes orix, Vieill. N. D. xiii. 1817, p. 536.

Oryx oryx, Less. Traité Orn. 1831, p. 438.

Euplectes oryx, Swains. B. W. Afr. i. 1837, p. 187.

Euplectes sundevallii, Bp. Consp. i. 1850, p. 446, Caffraria.

Euplectes pseudoryx, Reichb. Singvög. 1861, p. 56, pl. 23. figs. 200–202.

Euplectes edwardsi, Reichb. tom. cit. p. 57, ex Edw.

Euplectes petiti, Kirk, Ibis, 1864, p. 322, Zambesi and Shiré.

Pyromelana oryx, F. & H. Vög. Ostafr. 1870, p. 410.

Ploceus oryx, Woodward, Zoologist, 1875, p. 4397.

Pyromelana sundevalli, Holub & Pelz. Beitr. Orn. Südafr. 1882, p. 117.

Hab. S. Afr.: the whole of S. Afr.

95. PYROMELANA FRANCISCANA.

Loxia franciscana, Isert, Schrift. Gesell. Nat. Freunde Berlin, ix. 1789, p. 332, pl. 9 (fide Finsch & Hartl.).

Loxia ignicolor, Vieill. Ois. Chant. 1805, p. 92, pl. 59 (good), Senegal.

Fringilla ignicolor, Vieill. N. D. xii. 1817, p. 198.

Euplectes ignicolor, Swains. B. W. Afr. i. 1837, p. 184.

Fringilla oryx, Dubois, Orn. Galerie, 1839, p. 44, pl. 29.

? *Euplectes oryx,* Des Murs, in Lefebvre's Voy. Abyss. 1845–50, p. 111.

Euplectes franciscanus, Hartl. Orn. W.-Afr. 1857, p. 128.

Pyromelana franciscana, Finsch, J. f. O. 1869, p. 336.

Hab. N.E., E., and W. Afr., between about 15° N. lat. to 5° S. lat., south to Myamusi in East Africa, and to the Gold Coast and Niger on the west coast.

96. PYROMELANA NIGRIFRONS.

Pyromelana nigrifrons, Böhm, J. f. O. 1884, p. 177, Karema.

Hab. Central Africa, Karema on Lake Tanganyika.

97. PYROMELANA NIGRIVENTRIS.

Euplectes nigriventris, Cass. Pr. Ac. Philad. 1848, p. 66, Zambesi; id. Journ. Ac. Philad. 1849, p. 242, pl. 31. fig. 1.

Euplectes, sp.?, Licht. Nomencl. 1854, p. 49, Mosambique.

Pyromelana nigriventris, F. & H. Vög. Ostafr. 1870, p. 415.

Hab. E. Afr., between about 2° and 15° S. lat.; from Lamu to Mosambique.

98. Pyromelana diademata.

Euplectes diademata, Fisch. & Reichen. J. f. O. 1878, pp. 264, 354, Malindi (type exam.); 1879, pl. 2. fig. 1.

Hab. E. Afr., Malindi.

99. Pyromelana aurea. (Plate IX. fig. 2.)

Golden-backed Finch, Brown, Ill. Zool. p. 60, pl. 25. fig. 2, Benguela.

Loxia aurea, Gm. S. N. i. 1788, p. 846, ex Brown.

Euplectes aurinotus, Swains. An. in Menag. 1838, p. 310, ex Brown.

Hab. S.W. Afr., Benguela and Quanza.

100. Pyromelana scioana.

Euplectes scioanus. Salvad. Ann. Mus. Civ. Gen. 1884, p. 185, Shoa.

Hab. N.E. Afr., Shoa.

a, ♂. August, Shoa (*Antinori*, typical specimen, *Shelley Mus.*).

101. Pyromelana taha.

Euplectes taha, Smith, Rep. Exp. Expl. Centr. Afr. 1836, p. 50, Kurrichaine; id. Ill. Zool. S. Afr. pl. 7.

Ploceus dubius, Smith, Rep. Exp. Expl. Centr. Afr. 1836, p. 50 (in moult).

Euplectes abyssinicus, Strickl. & Sclat. (nec Gm.), Contr. Orn. 1850, p. 150, Damara.

Taha dubia, Reichb. Singvög. 1861, p. 73.

Hab. S. Afr.: confined to S. Africa, where it is very generally distributed.

102. Pyromelana sticta.

? *Fringilla abyssinica*. Gm. S. N. i. 1788, p. 927.

Euplectes abyssinicus, Rüpp. Syst. Uebers. 1845, p. 76, Abyssinia.

Euplectes stictus, Heugl. Syst. Uebers. 1856, p. 39. no. 385, Simen.

? *Taha abyssinica,* Reichb. Singvög. 1861, p. 73, ex Gm.

Euplectes taha, Antin. Cat. 1864, p. 68.

Euplectes habessinicus, Heugl. Orn. N.O.-Afr. 1871, p. 575 (part.), N.E. Afr.

Orynx afer, Heugl. tom. cit. App. 1873, p. cxxxiii (part.), N.E. Afr.

Euplectes ladoensis, Reichen. J. f. O. 1885, p. 218, Lado (type exam.).

Hab. N.E. Afr., Abyssinia and the Nile-region between 15° and 5° N. lat.

a, ♂. June; *b,* ♂. August, Lado (*Shelley Mus.*).

103. PYROMELANA AFRA.

Black-bellied Grosbeak, Brown, Ill. 1776, p. 58, pl. 24. fig. 2.

Loxia afra, Gm. S. N. i. 1788, p. 857, ex Brown.

Loxia melanogastra, Lath. Ind. Orn. i. 1790, p. 394, ex Brown.

Worabée, Vieill. Ois. Chant. 1805, p. 52**, pl. 28** (fair).

Fringilla abyssinica, Vieill. N. D. xii. 1817, p. 232.

? *Coccothraustes melanogastra,* Vieill. N. D. xiii. 1817, p. 543.

Fringilla ranunculacea, Licht. Verz. Doubl. 1823, p. 23, ex Worabée (Vieill.).

Euplectes melanogastra, Swains. B. W. Afr. i. 1837, p. 182, Senegal.

Euplectes afer, Sharpe, Cat. Afr. B. 1871, p. 62.

Pyromelana afra, Shelley, Ibis, 1883, p. 552.

Hab. W. Afr., from the Niger to Senegambia and Fernando Po. The locality Quanza (*Whitely*), fide Bocage, Orn. Angola, p. 338, is probably incorrect.

18. QUELEA.

	Type.
1850. *Quelea,* Reichb. Syst. Nat. pl. 76	*Q. quelea.*
1851. *Hyphantica,* Cab. Mus. Hein. i. p. 180 . . .	*Q. quelea.*

This genus I have divided into four species belonging to two well-marked groups—one characterized by the bill not being red, and in the fully adult male by a red head, the other group by a red bill in both sexes. In the former the winter plumage is almost precisely the same as in *Pyromelana.*

The members of the red-billed group are certainly subject to considerable variation in brightness, according to age and season, and occasionally somewhat in size; but I can detect no constant characters for the separation of these varieties.

I have not kept *Q. russi* as a distinct species, as it appears to me to be only a pale-headed variety of the male of *Q. æthiopica,* or a very fully plumaged female of that species; and *Q. quelea* has a similar variety.

Key to the Species.

a. Bill never red; head red in adult males.
  *a*¹. Bill longer, culmen less curved; wing 2·5 inches. In adult males base of the red feathers of the throat black .... 104. *Q. erythrops.*
  *b*¹. Bill shorter, culmen more curved; wing 2·3 inches. In adult males base of the red feathers of the throat white .... 105. *Q. cardinalis.*
b. Bill red; no scarlet on the head.
  *c*¹. In adult males, sides of the head and upper half of the throat black.
    *c*². Forehead black .... 106. *Q. quelea.*
    *d*². Forehead not black .... 107. *Q. æthiopica.*

104. Quelea erythrops.

Ploceus erythrops, Hartl. Rev. Zool. 1848, p. 110, St. Thomas Is.

Euplectes erythrops, Hartl. Abhandl. nat. Ver. Brem. ii. 1848, pl. 8.

Fringilla erythrocephala, Des Murs (nec Linn.), Lefebvre's Voy. Abyss. 1850, p. 119, Adowa.

Foudia erythrops, Bp. Consp. i. 1850, p. 446.

Quelea capitata, Du Bus, Bull. Acad. Brux. xxii. part 1, 1855, p. 151, Senegal.

Quelea erythrops, Heine, J. f. O. 1860, p. 144.

Foudia hæmatocephala, Heugl. J. f. O. 1864, p. 250, Bongo.

Calyphantria hæmatocephala, Heugl. J. f. O. 1867, p. 390.

Ploceus hæmatocephala, F. & H. Vög. Ostafr. 1870, p. 407, note.

Hyphantica hæmatocephala, Heugl. Orn. N.O.-Afr. 1871, p. 545, pl. 19*a*.

Hyphantica erythrops, Fisch. & Reichen. J. f. O. 1879, p. 352.

Hab. E. and W. Afr. In E. Africa between 8° N. lat. and 5° S. lat., from Bongo to Pangani, and the whole of W. Africa from the Quanza to Senegambia, and the Islands of St. Thomas and Prince.

105. QUELEA CARDINALIS.

Hyphantica cardinalis, Hartl. J. f. O. 1880, p. 325, Lado; 1881, pl. 1. figs. 1, 2.

Hab. E. Afr., between about 5° N. lat. and 5° S. lat., from Lado to Ngaruman.

a, ♂. June; *b,* ♀. August, Lado (*Shelley Mus.*).

106. QUELEA QUELEA.

Brazilian Sparrow, Edw. Nat. Hist. B. 1743, p. 128, pl. 271. fig. 2.

? *Loxia sanguinirostris,* Linn. S. N. i. 1766, p. 303, Asia.

Emberiza quelea, Linn. tom. cit. p. 310, Africa (orig. descr. good).

Loxia quelea, Daud. Traité Orn. ii. 1800, p. 443.

Dioch, Vieill. Ois. Chant. 1805, p. 46, pls. 22 ♂, 23 ♀.

Dioch rose, Vieill. tom. cit. p. 48, pl. 24.

Fringilla quelea, Vieill. N. D. xii. 1817, p. 233.

Loxia lathami, Smith, Rep. Exp. Expl. Centr. Afr. 1836, p. 51, Kurrichaine.

Euplectes sanguinirostris, Swains. B. W. Afr. i. 1837, p. 188.

Ploceus sanguinirostris, Chapman, Trav. S. Afr. ii. 1848, p. 401.

Quelea sanguinirostris, Bp. Consp. i. 1850, p. 445.

Hyphantica sanguinirostris, Cab. Mus. Hein. i. 1851, p. 180 (part.).

Quelea occidentalis, Hartl. Orn. W.-Afr. 1857, p. 129, Senegal, Casamanse, Guinea.

Quelea lathami, Reichb. Singvög. 1861, p. 67, pl. 30. figs. 236–238.

Quelea quelea, Shelley, Ibis, 1882, p. 356.

Hab. S. and W. Afr. The whole of S. Africa and W. Africa, from Guinea to Senegambia.

a, ♂, Transvaal, no. 77.7.11.343, has the typical black of the head surrounded by pink; *b,* " ♂," Transvaal, no. 77.7.11.167, has the portions of the head which are black in typical adult males buff, and these parts are surrounded with pink (*Brit. Mus.*). *b* is a good S.-African parallel of *Ploceus russi,* Finsch. There is another striking variety of both this and the next species, which is not very uncommon, in which the plumage is rufous or cinnamon, strongly mottled with black.

107. QUÉLEA ÆTHIOPICA.

Emberiza quelea, Des Murs (nec Linn.), in Lefebvre's Voy. Abyss. 1850, p. 119.

Ploceus sanguinirostris, var. *æthiopicus,* Sundev. Œfv. K. Vet.-Ak. Förh. Stockh. 1850, p. 126.

Ploceus sanguinirostris var. *major,* Sundev. l. c.

Ploceus sanguinirostris, Strickl. P. Z. S. 1850, p. 218, Kordofan.

Coccothraustes sanguinirostris, Heugl. Syst. Uebers. 1856, p. 39. no. 357.

Quelea orientalis, Heugl. J. f. O. 1862, p. 27, Bogos, Abyssinia.

Quelea sanguinirostris, Antin. Cat. 1864, p. 67.

Quelea æthiopica, Blanf. Geol. & Zool. Abyss. 1870, p. 405.

Ploceus russi, Finsch, Gefied. Welt, 1877, p. 317, Africa.

Hyphantornis quelea, Cab. J. f. O. 1878, p. 232.

Hyphantica sanguinirostris, Finsch, J. f. O. 1885, p. 134.

Euplectes gregaria, P. v. Würt. MS. }
Loxia africana, P. v. Würt. MS. } fide Heugl.
Quelea socia, P. v. Würt. MS. }

Hab. N.E. and W. Afr., southward from about 18° N.

lat. to Ugogo, and possibly Mosambique, on the east side, and to Senegambia on the west coast.

a and *b* (*Brit. Mus.*). Bright varieties: cheeks and ear-coverts buff, breast shaded with rufous; very typical forms of *Ploceus russi*, Finsch. I have examined very similar specimens in the Berlin and Paris Museums. They have occasionally the sides of the head and throat, which would be black in typical males, slightly marked out in brown; but I find no sex attached to any of the labels. In the Zoological Society's Gardens there is now a very fine living specimen of this form, which I regard as a variety of *Q. æthiopica*, although I am unable to prove such to be the case.

XXXVI.—*Additional Notes on the Genus* Acanthis.

By W. Edwin Brooks.

Thanks to the kindness of Dr. L. Stejneger, of the United States National Museum, I have been able to examine a number of Redpolls of different species, and I find that it is necessary to supplement my notes on these birds in 'The Ibis' for October 1885, pp. 381–384, by some additional particulars.

The superiority of the broad white edgings to the tertials and tail-feathers, but especially the latter, in *Acanthis exilipes* will not hold good; for *A. hornemanni*, in good fresh feather, has very marked white edges to the tail-feathers. There is also much white on the tertials. The reliable distinction between the two is certainly the very great difference in size. The wings of three male *A. hornemanni* now before me measure 3·42, 3·30, and 3·28 inches; and of three male *A. exilipes* 3·00, 2·90, and 2·90. In his paper in 'The Auk' for April 1884, Dr. Stejneger gives the average for the wings of six male *A. hornemanni* as 3·40, and of seventeen male *A. exilipes* as 2·91, of six female *A. hornemanni* 3·31, and of twelve female *A. exilipes* 2·80. I think it may also be remarked here that the wing of *A. exilipes* averages longer than that of *A. linaria*.

Some people might be inclined to say that difference of locality would alter the size; but those of which I have given the measurements are all from the same place, Ungava, where four species of *Acanthis* are found.

In his paper on the genus *Acanthis* ('The Auk,' 1884), Dr. Stejneger speaks of another species of *Acanthis*—*A. rostrata,* Coues. This is also found in Ungava, and down along the coast to the more northern United States. Of this species I have seen two males and two females collected near Fort Chimo, Ungava. It is a fine robust bird, almost equalling *A. hornemanni* in size. The two males had wings 3·40 and 3·10, and the two females 3·10 and 3·00. The bill is of a peculiar form, convex on the outlines, and shaped more like a Sparrow's than a Redpoll's. The coloration is like that of *A. linaria,* except that the streaks below are darker and bolder, and on the whole it is not such a mealy-looking bird as *A. linaria.*

If it should be said that the white tone of *A. hornemanni* is due to residence in very northern latitudes, here we have the dark *A. rostrata* inhabiting the very same country. Let it be remembered that it is a Greenland bird, found also in North-east America, *i. e.* Labrador. One of the males was a red May bird collected at Fort Chimo, Ungava. The red on the breast did not reach so far down as in *A. linaria* and ended abruptly. The upper and lower tail-coverts are strongly streaked in this species; but it is the excessively heavy flank-streaking that strikes one so forcibly at first sight. Briefly it may be described as a large, dark, heavily streaked Redpoll with a Sparrow-like bill, in contradistinction to the large white Redpoll, *A. hornemanni,* with a true Redpoll bill. Those who prefer to consider it a subspecies may do so; but to my eye it is so thoroughly distinct that I should never dream of confounding it with anything else. Speaking of *Acanthis rostrata,* Dr. Stejneger says ('The Auk,' 1884, pp. 149–150):—"Mr. William Brewster has, in a very instructive and interesting memoir 'On Holböll's Red-Poll' (Bull. Nutt. Orn. Club, 1883, pp. 95–99), expressed the suspicion that *A. linaria* and what he calls *A. holboelli* 'are forms closely allied, but nevertheless sufficiently segregated to rank as distinct species.' Compared with my statements above, we seem to be of very opposite views in this case; but I think I can offer a satisfactory explanation. By comparing summer specimens of the so-called *A. holboelli* from Greenland and more southern winter birds with the ordinary form occurring in Europe and America under that name, I was at once struck by the great differences. The Greenland bird is evidently considerably larger, its bill much stouter and somewhat differently shaped—not so pointed—besides being on the *average* a trifle *shorter*. As to colour, I thought they were rather darker and heavier-streaked below. I was very soon convinced that these birds were different from the common *A. holboelli*, being in fact the form originally described by Coues as *A. rostratus*, but afterwards given up by him. It was also clear that the specimens examined and described by Brewster were the winter plumage of the same form. The Redpolls are rather difficult to determine from descriptions, but if the latter were all so clear and thorough as those of Mr. Brewster, there would have been less confusion in this group of birds. His statement that the specimens from New England 'will be found to differ from the ordinary type (*A. linaria*) in being very much larger, with stouter, less acute bills, generally darker coloring, and especially darker, coarser streaking beneath,' will apply to *A. rostrata*, as distinguished not only from *A. linaria* but also from true *A. holboelli*. Nevertheless, I do agree with him in regarding *Acanthis rostrata* as a 'distinct species.' The conclusion of Mr. Brewster is easily explained, he probably having only the short-billed *A. linaria* for comparison; but as the measurements given below show there is a regular intergradation, and the Greenland bird cannot be justly designated except as conspecific with the other forms. It will therefore, after the common usage of American writers, stand as *A. linaria rostrata*." (*Stejneger, l. s. c.*)

With this last conclusion of Dr. Stejneger's I cannot agree, and I go entirely with Mr. Brewster as to complete specific distinctness. Apart from its gigantic size for a

Redpoll, it possesses a notable character of its own in its most un-redpoll-like bill. On the whole, I do not know of any species more satisfactory.

I have an observation or two to make on the "species" *Acanthis holboelli*, Brehm. I have examined five examples, two of them being European. Wings 3·10 to 2·80. The coloration is that of *A. linaria*, with streaking perhaps not quite as bold, but the bill is long and almost Goldfinch-like. But for the extra long bill it could not be separated from *A. linaria*. I have had many more than one hundred *A. linaria* through my hands, obtained here and elsewhere, and in no instance have I been able to match the long bill of typical *A. holboelli*. In one European example, from point of bill to back of skull is 1·15, another 1·10, of a third 1·12, and of a fourth 1·10. This measurement is in average *A. linaria* (male) about 1·00. To me it is not a thoroughly satisfactory species, like the others, but at present its long bill is not easily accounted for. I am not partial to the trinomial system, but for convenience' sake this bird might stand as *Acanthis linaria holboelli*. It is a variation not yet thoroughly worked out.

Another form Dr. Stejneger treats of in his excellent monograph in 'The Auk' above referred to is *Acanthis linaria pallescens*, Homeyer. This is, I think, only a variation of the ordinary *A. linaria*. I examined Dr. Stejneger's Norwegian example. Like others I have obtained here, it is extra mealy-looking. Some examples of *A. linaria* appear quickly to lose all fulvous tone after the autumnal moult, if they had it then, and the two prevailing colours left are dark brownish grey and white. This loss of colour may be due to weakness or some other cause, but it is certainly not specific, and I should say one or more might be found in every spring flock of *A. linaria*.

I would abandon this form altogether, not allowing it even the use of a trinomial.

We have, then, five very well-marked species of *Acanthis*, viz. *A. hornemanni*, *A. exilipes*, *A. rostrata*, *A. linaria*, and *A. rufescens*: also one doubtful bird, *A. linaria holboelli*.

Dr. Stejneger adds a P.S. to the following effect, which I forgot to quote in its proper place:—

"P.S.—Since the above was written, Mr. W. Brewster has had the great kindness to send to me for inspection the specimens upon which his remarks on *A. holboelli* in his above-quoted paper were based. They confirm what I have already said, and there can, in my opinion, be no doubt that these Redpolls are birds bred in Greenland, or perhaps on the opposite shore of North America, wandering along the coast-line in winter as far south as New England and New York. They are, in all respects, true and typical *A. l. rostrata.*"

It may be noticed that *A. hornemanni* has its diminutive counterpart in *A. exilipes,* and *A. rostrata* its diminutive in *A. linaria.* It would be folly to speculate whether the lesser were evolved from the greater, or the greater from the less; for we know nothing at all about such derivations, and ideal or imaginary natural history, mere speculation far removed from facts, like the greater part of Mr. Seebohm's paper on the genus *Scolopax,* is useless, wearisome, and positively painful. Of what value is fancy in ornithology? and unfortunately the tendency to indulge in flights of fancy is largely on the increase.

It is strange how uncertain the Redpolls are in their autumnal migration. I have not seen one this last winter, 1885–86. In 1884–85 they were plentiful, and during 1883–84 none at all. In 1882–83 they were again numerous, and during 1881–82 I never saw one. Of course I refer to the winters of each term, November to March. This last winter was severe, so also was that of 1883–84.

In December, January, and February, 1882–83, examples of *A. hornemanni* were obtained at Fort Chimo, Northern Labrador; so these birds can endure a great amount of cold. In January 1883 we had it 10 and 11 degrees below zero here (Milton, Ontario), very much further south. North Labrador must have been very much colder.

I have a few examples (four), to all appearances *A. exilipes,* except that the rump is a little streaked, and the lower tail-coverts slightly so. These must be either hybrids between

A. exilipes and *A. linaria,* as in the case of the Crows, *Corvus cornix* and *C. corone,* or else the distinctive points of the unstreaked white rump and the unstreaked lower tail-coverts do not always hold good in *A. exilipes*; or, again, they are of a distinct species intermediate between the two. I should hardly say "intermediate," for even at a hasty glance the very superior whiteness would proclaim them to be *A. exilipes.* A hybrid ought to be of really intermediate tone, but this bird is *A. exilipes* even to its small bill, and is quite as generally white.

Eggs of the different Redpolls in collections must be very doubtful indeed when collected in Greenland or North-east America, for the collectors may have taken those of *A. rostrata* for *A. hornemanni*; and again eggs from Northern Europe referred to *A. linaria* may be those of *A. exilipes.* Except when the parent bird is sent with the eggs, they should be put out of collections, and fresh ones with the old bird obtained. I expect the egg of *A. rostrata* will prove to be the largest of the lot: the bird is so sturdy-looking.

XXXVII.—*Notices of Recent Ornithological Publications.*

[Continued from p. 203.]

54. *Annals of the Natural-History Museum of Vienna.*

[Annalen des k. k. naturhistorischen Hofmuseums. Band i. Nr. 1, Jahresbericht für 1885 von Dr. Franz Ritter von Hauer. Wien: 1886.]

The first part of this new periodical contains a report by Dr. v. Hauer on the newly erected Museum of Natural History in Vienna and its various departments. Besides Zoology, Botany, and Mineralogy in Austria, they have wisely located Anthropology in the same building. The Birds in the new museum remain under the charge of our excellent friend and correspondent Herr August v. Pelzeln. The general mounted collection of this class is stated to contain 20,000 examples, besides which there is a separate series to illustrate the Ornis of the Austro-Hungarian empire, consisting of 621 specimens referable to 340 species.

55. *Bennett on Birds breeding in New South Wales.*

[Notes on the Habits, &c. of Birds breeding in the interior of New South Wales. By K. H. Bennett. Proc. Linn. Soc. N. S. W. x. p. 162.]

Mr. Bennett's present article relates to the habits of *Falco subniger* and *Glareola grallaria.* It appears that the former preys occasionally on *Elanus scriptus,* so that the old proverb "hawks not picking out hawks' een" does not hold good in Australia. The Falcon is apt to appropriate other birds' nests for breeding-purposes. The Pratincole deposits its eggs on the bare surface of the ground.

56. *W. Blasius on measuring Birds' Skeletons.*

[Osteologische Studien (Messungs-Methoden an Vogel-Skeletten). Von Prof. Dr. Wilh. Blasius. J. f. O. 1885, p. 409.]

Prof. Blasius, who has great experience in such matters, gives in detail what he considers to be the best and most useful measurements to be taken of the various bones of the skeletons of birds.

57. *W. Blasius on the Birds of Prey of Cochabamba.*

[Die Raubvögel von Cochabamba. Von Prof. Dr. Wilh. Blasius. Mitth. d. ornithol. Vereines in Wien, 1884, Nr. 9.]

The receipt of a collection of bird-skins from Prof. E. v. Boeck has enabled Prof. Blasius to make some additions and rectifications to the former's accounts of the Birds of Prey of Cochabamba, in Bolivia. A revised list of these birds, according to the nomenclature adopted by M. Taczanowski, is added. It contains 21 species.

58. *W. Blasius on Birds from Cochabamba.*

[Ueber einige Vögel von Cochabamba in Bolivia. (Nach brieflichen Mittheilungen der Herrn Prof. Eug. von Boeck.) Von Prof. Dr. Wilh. Blasius. J. f. O. 1885, p. 416.]

Prof. Blasius gives extracts from letters of Prof. E. v. Boeck of Cochabamba, which contain further information respecting *Psophia cantatrix* and other species of Prof. v. Boeck's list, and mention the occurrence of *Eurypyga helias* on the Mamoré.

59. *Boeck on the Birds of Cochabamba.*

[Ornis des Thales von Cochabamba in Bolivia und der nächsten Umgebung. Von Prof. Eugen von Boeck. Mit Anmerkungen von Prof. Dr. Wilh. Blasius. Mitth. d. ornithol. Vereines in Wien, 1884, Nr. 7, 11.]

The valley of Cochabamba lies among the Andes of Bolivia, at a height of 7000–8000 feet above the sea-level. After a prefatory account of its physical features and vegetation, Prof. v. Boeck gives a list of its native birds, with remarks upon them. The system adopted is that of the somewhat antiquated 'Fauna Peruana' of Tschudi, being the only one available to the author in his remote and isolated home. About 110 species are included in the list. *Phytotoma angustirostris* is a "very common and destructive bird" to the growing plants, which it nips off as they spring up. Its native name is "Coque," because its mouth is green, like that of a coca-eating Indian. The splendid Humming-bird, *Cometes phaon,* is found in the valley, and also up to the height of 9000 feet in the surrounding Andes. *Rhea americana,* we are told, occurs in the Cordillera of Tacora, near Tacna. Can this be correct?

60. *Dresser's Monograph of the Bee-eaters.*

[A Monograph of the Meropidæ, or Family of the Bee-eaters. By H. E. Dresser, F.L.S. Part V. Small folio. London: 1886.]

Mr. Dresser's fifth number brings his monograph of the Bee-eaters to a successful conclusion. The whole family, as here arranged, contains 31 species divided into five genera. Every species is well figured by Keulemans, and the letterpress contains a summary of all that can be gathered together concerning a set of birds which are not generally very well known.

The fifth number contains figures of the following species:—

Nyctiornis amictus, jr.
Merops viridis.
—— muscatensis.
Melittophagus gularis, jr.
Melittophagus bullocki.
—— boleslavskii.
—— revoili.

61. *Finsch and Meyer on Birds from New Guinea.*

[Vögel von Neu-Guinea, zumeist aus der Alpenregion am Südostabhange des Owen Stanley-Gebirges (Hufeisengebirge, 7000–8000′ hoch), gesammelt von Karl Hunstein, bearbeitet von O. Finsch und A. B. Meyer. Zeitschr. f. d. ges. Ornithol. 1886, Heft i.]

This is the second and concluding portion of the article of the first part of which we have given above (pp. 237–258) a translation by the kind permission of the authors. The present portion treats of 69 species, mostly from the Horseshoe Mountain, in the south-east confines of the Owen-Stanley range in New Guinea. Of these the following twelve are characterized as new to science:—*Psittacella pallida, P. madaraszi, Eos incondita, Charmosyna stellæ, Arses henkei, Rhipidura cinnamomea, Myzomela ramsayi, Melipotes fumigatus, Melidectes emilii, Ptilotis fulvocinerea, Ptilopus patruelis,* and *Eutrygon leucoparia.* All these birds are figured with the exception of *Psittacella pallida, Myzomela ramsayi,* and *Eutrygon leucoparia.* A figure is also given of the curious diminutive Cuckoo *Microdynamis parva* of Salvadori, with which E. P. Ramsay's *Rhamphomantis rollesi* (Proc. Linn. Soc. N. S. W. viii. p. 25) is said to be probably identical. The exact locality of the specimen is not stated.

62. *Hancock on the Cuckoo.*

[Note on the habit of the young Cuckoo in ejecting the Eggs and Young of its Foster-parent from the Nest, observed by John Hancock, at Oatlands, Surrey, in June 1884. Nat. Hist. Trans. of Northumb., Durham, and Newcastle-upon-Tyne, vol. viii.]

Mr. Hancock selected, as most convenient for observation, the nest of a Hedge-Accentor containing one Cuckoo's egg and four of those of the former. The process of ejectment of the produce of the foster-parents was carefully watched, and was found to agree with the descriptions previously given by Jenner, Montagu, and Mrs. Blackburn. Mr. Hancock expresses his surprise at the remark of a recent writer who says that "one feels inclined to class these narratives with the equally well-authenticated stories of ghosts and other apparitions which abound." Mr. Hancock says that no ornithologist has yet been able to answer satisfactorily the questions as to the sex which utters the well-known note, as to the time of moulting of the young Cuckoo, and as to the way in which the Cuckoo arrives at a knowledge of the time when she must place her egg in the nest selected for her purpose.

63. *Kingsley's 'Standard Natural History.'*

['The Standard Natural History,' edited by John Sterling Kingsley. Vol. iv. Birds. Boston: S.E. Cassino and Co., 1885.]

Those who wish to make themselves acquainted with the most "advanced" views on the classification of birds should devote their attention to the fourth volume of Kingsley's 'Standard Natural History.' The 'Natural History of Birds' is stated to have been prepared by "Walter B. Barrows, Daniel G. Elliot, Leonard Stejneger, Ph.D., and J. S. Kingsley, D.Sc." But it will not be difficult for any one acquainted with the writings of modern ornithologists to see at a glance which of these four gentlemen has had the greater share in its preparation, and under whose guidance the whole has been shaped into its present form. It would have been much better to have added to the "contents" the name of the author of each division, which can only be ascertained by a hunt for the signature that is attached to each succeeding portion. There, however, can be no question that the volume, as a whole, may be attributed to Dr. Stejneger, and great credit is due to him for its preparation. No work issued in Europe contains such a good general account of the Class of Birds according to the most recent researches of naturalists, and brings one into acquaintance with the newest discoveries in this group of vertebrates. In making a few critical remarks, as we turn over its pages, we are influenced by the hope that these points will receive attention in the preparation of the second edition of the 'Standard Natural History of Birds,' which which will assuredly be called for.

The authors commence at the lower end of the series of birds, and treat first of the "Saururæ," "Odontormæ," and "Odontoholcæ," as these three extinct subclasses are denominated, leaving modern birds to the fourth subclass "Eurhipiduræ" of Gill, so-called in contradistinction to "Saururæ," from their fan-like tail. The Eurhipiduræ are subdivided into three "superorders," Dromæognathæ, Impennes, and Euornithes. The Tinamoos are annexed to the Struthiones in the first of these. It is, however, we think, hardly justifiable to use Prof. Huxley's term "Dromæognathæ," intended for the Tinamoos only, in this extended sense: it would be even better, in our opinion, to retain the term "Struthiones" for the group thus constituted. The name "Ratitæ" is of course no longer applicable to a division in which the Tinamoos are included. That the authors are right in the important rank thus conferred on the Penguins, we are firmly convinced. The Penguins cannot be descendants of ancestors that ever had normal bird's wings, and must be kept quite apart from the typical birds. But whether it is justifiable to include the Tinamoos in the same primary division as the Struthiones, and to raise the Penguins to exactly the same level as this division, we are not so certain.

Dr. Stejneger's classical terms are mostly so far more correct than those of the general run of his brother ornithologists that he will excuse us for pointing out that the plural of ὀδοῦς, a tooth, is not "odontoi," nor that of "scutellum" "scutellæ"! As regards our friend Prof. Newton's well-known claim in favour of the Crow as the most "unchallenged chief" of the class of birds, Dr. Stejneger well shows (pp. 482, 483) that the Corvine tarsus is "very low indeed"; and he might have added that the structure of the Crow's wing is likewise incompatible with so high a rank. We agree with Dr. Stejneger that the most highly developed bird is a nine-primaried Oscine, but are not sure that the much-detested Sparrow has not as good claims for this exalted position as Dr. Stejneger's candidates the Hawfinch and the Evening-grosbeak.

Subjoined is a passage from Dr. Stejneger's disquisition on the subject of counting the primaries in the bird's wing, which deserves the serious attention of ornithologists:—

"The fact is, really, that the tenth (first) primary is not absolutely wanting in the 'nine-primaried' Passeres, but its size is so extremely reduced as to become quite or nearly invisible in the old birds, the more so since its position is also slightly changed, as it is forced up on the upper surface of the wing. Not so in the young, however. In a very young specimen of the Snow-flake (*Plectrophenax nivalis*), a 'nine-primaried' species, now before me, the outermost (tenth) primary is plainly visible in its natural position, and with the corresponding great covert in its proper place; that is, in the interval between the ultimate and penultimate primaries. From this it will be easily perceived how perverse is the method of counting the primaries from the edge of the wing, since, in nine-primaried birds, the feather which is usually called the first, in reality corresponds to the second of the ten-primaried species. By counting from the secondaries, no difficulty is experienced."

64. *Lawrence on two new Birds from Yucatan.*

[Characters of two supposed new Species of Birds from Yucatan. By George N. Lawrence. Ann. N. Y. Acad. Sci. vol. iii. no. 9, p. 273.]

On specimens transmitted from Yucatan by Mr. Gaumer, Mr. Lawrence has based two new species, *Polioptila albiventris* and *Chætura gaumeri*.

65. *Lwoff on the Histology of Feathers.*

[Beiträge zur Histologie des Haares, der Borste, des Stachels und der Feder. Von W. Lwoff. Bull. Soc. Imp. Nat. Moscou, 1884, p. 1, taf. v.–viii.]

This is a German translation of a memoir originally published in 1883 in Russian. It treats of the minute structure of hair and feathers, and is illustrated by four plates.

66. *Macpherson and Duckworth on the Birds of Cumberland.*

[The Birds of Cumberland critically studied, including some notes on the Birds of Westmoreland. By the Rev. H. A. Macpherson, M.A., and William Duckworth. Carlisle: 1886. 8vo.]

This work forms a natural complement to Mr. Mitchell's

'Birds of Lancashire,' already favourably noticed in these pages, and it would be hard to say which is the better of the two. Both of the authors of the present work are excellent field-naturalists, and have received ample assistance from numerous collaborators of the same stamp. The total number of the species recorded is 250, of which 84 are residents, 81 periodical visitants, and 85 are of irregular and accidental occurrence. A strong feature is the care with which their distribution is treated; and many British ornithologists will learn with surprise that the only satisfactory case of the occurrence of the Nuthatch in Cumberland dates back to May 1782, when Heysham received one of a pair from Armathwaite. The Siskin has been found to be a regular breeder in some parts of the county during the last few years; but the Twite has, for some unknown reason, decreased. The Raven is stated to be nearly as abundant as it was half a century ago; but game-preservers will feel satisfaction at hearing that the Hooded Crow is only a scarce and winter visitant to Cumberland. For descriptions of birds in their breeding-haunts, attention may be especially directed to the account of the Pied Flycatcher (p. 31) and of the Dotterel (p. 133) by Mr. Frank Nicholson; while lovers of remarkable facts will be interested in the record of the Lesser Redpoll's nest built entirely of cotton-waste close to the Caledonian railway engine-shed. We had long been aware that the telegraph-wires exercised an appreciably fatal influence upon many species, especially game-birds; but it is sad to learn that the Tawny Owl, from its habit of mousing on railway lines, is often felled by locomotives. A few clerical errors can be corrected in a later edition, and it would be more consistent with the present custom if capitals were omitted in the specific names. A map adds to the usefulness of this excellent volume, which is further embellished by a coloured plate of the Dotterel by Keulemans.

67. *Meyer's Illustrations of Birds' Skeletons.*

[Abbildungen von Vogel-Skeletten. Herausgegeben von Dr. A. B.

Meyer. Lief. i. (1879), ii., iii. (1881–82), iv., v. (1883), vi., vii. (1884), viii., ix. (1885), 4to. Dresden: 1879–85.]

Much too little attention, there can be no doubt, has as yet been paid to the study of the osseous framework of the class of birds, and Dr. Meyer's 'Illustrations,' which have now reached their ninth number, and contain already not less than 90 plates, will be much valued by naturalists. It may, however, be remarked that, as a general rule, figures of individual bones are of greater assistance to the working ornithologist than those of the whole skeleton, in which, especially when they are prepared from photographs as in the present case, there is sometimes an indistinctness about some particular point that one is wishing to investigate.

Dr. Meyer's plates are not arranged in systematic order, but we trust that at the close of the work a systematic list will be given, which will greatly increase their usefulness. We must also say that the letterpress which accompanies the plates is rather meagre. It consists mainly of the results of measurements, which are of little value in classification. A general disquisition on the osteology of birds with references to the individual figures should certainly form a portion of a work of this character.

68. *'Mittheilungen' of the Ornithological Union of Vienna.*

[Mittheilungen des ornithologischen Vereines in Wien. Section für Vogelkunde, Jahr. 9, no. 29–30; Jahr. 10, no. 1–5, 1885–86.]

Amongst many articles of interest in the recent numbers of this periodical is Hodek's account of his collecting-expedition on the Lower Danube, during which a specimen was obtained of a Pelican "new to Europe." Of this curious bird a lengthened description is given (Jahrg. 10, no. 2, pp. 13, 14). It is stated that Herr v. Pelzeln is inclined to refer the specimen to *Pelecanus rufescens*. But if we understand Herr v. Hodek's account of the termination of the feathered space at the base of bill correctly, the "anonymus" must belong to the group allied to *P. onocrotalus*, and perhaps be an abnormal variety of that species. Sclater has long suspected that *P. sharpii* of Bocage (*cf.* P. Z. S. 1871, p. 632) may be merely a "hepatic" form of *P. onocro-*

talus. Is not Herr Hodek's Pelican a somewhat similar bird?

69. *Oustalet on new Birds from New Guinea.*

[Note sur un Perroquet et sur un Goura de la côte septentrionale de la Nouvelle Guinée, par M. E. Oustalet. Ann. Sc. Nat. sér. 6, Zool. xix. art. 3 (1885).]

The specimens described are from the collection made by M. Laglaize on the north coast of New Guinea. The Parrot is named *Cyclopsittacus edwardsi*; the Pigeon *Goura victoriæ* var. *comata*.

70. *Random Notes on Natural History.*

[Random Notes on Natural History. Providence, R. I. Vol. iii. no. 2.]

This appears to be a popular Magazine of Natural History published at Providence, Rhode Island, U. S. A., which occasionally contains ornithological articles.

71. *Report on the Dresden Museum of Art and Science.*

[Bericht über die Verwaltung der königlichen Sammlungen für Kunst und Wissenschaft zu Dresden in den Jahren 1882 und 1883. Dresden: 1885.]

The excellent arrangements of the Royal Museum of Art and Science at Dresden are known to all the world. Our valued correspondent Dr. A. B. Meyer has the direction of the Zoological, Anthropological, and Ethnographical Museum, to the Ornithological Section of which 398 specimens were added in 1882, and 241 in 1883. Amongst these is specially noticed the skin and skeleton of *Notornis mantelli*, presented by Herr O. Lobel, of which Dr. Meyer has already published particulars (*cf.* Ibis, 1882, p. 607).

72. *Report on the Observing-stations of German Birds.*

[Jahresbericht (1883) des Ausschusses für Beobachtungsstationen der Vögel Deutschlands. J. f. O. 1885, p. 225.]

The eighth report of the Committee appointed to collect statistics on the Birds of Germany occupies over 100 pages of the 'Journal für Ornithologie.' It has been prepared by Dr. R. Blasius, J. Rohweder, R. Tancré, and A. Walter, all names well known in connection with German ornithology. Thirty-four observers in nine different parts of the Empire have contributed their observations, which have been worked up together by the reporters, and arranged in systematic order. They relate to 216 different species. The most noticeable general results are summarized in some introductory remarks.

73. *Schalow's Essay on the Touracoos.*

[Die Musophagidæ. Monographische Studien von Herman Schalow. J. f. O. 1886, p. 1.]

The Berlin Museum contains examples of all the twenty-five known members of the family Musophagidæ, and most of the recently discovered species have been made known to us by the enterprise of German explorers. It was therefore quite proper that the task of a revision of this interesting Ethiopian group should be undertaken by a German ornithologist. Schlegel and Westerman's huge Monograph of 1860 is the last published general work on the subject.

After some preliminary observations Mr. Schalow gives a *résumé* of former views as to the position of the family in the system, and a list of the principal publications on the subject. In his key to the genera, after separating *Musophaga*, which is at once distinguished by the peculiar form of the bill, the remaining Touracoos are separated into five genera, *Corythaix*, *Gallirex*, *Corythæola*, *Schizorhis*, and *Gymnoschizorhis*, the last mentioned being a new genus distinguished from *Schizorhis* by its face being bared of feathers. The species are then taken in systematic order one after the other, and all particulars as to their form, colour, synonymy, range, and habits are succinctly stated. A list is given under each species of the specimens in the Berlin Museum, with exact localities. The heads of five species are represented in a coloured plate. Altogether we consider this an excellent and very useful piece of work.

74. *Sclater on the Cærebidæ, Tanagridæ, and Icteridæ.*

[Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum. Fringilliformes: Part II., containing the Families Cærebidæ, Tanagridæ, and Icteridæ. By Philip Lutley Sclater. London: 1886. 431 pp., 18 coloured plates.]

The eleventh volume of the British Museum Catalogue of Birds is devoted to the Cærebidæ, Tanagridæ, and Icteridæ.

The species of Cærebidæ recognized are 70. Of these 63 are represented in the Collection by 672 specimens, 15 of which are types. Thus only 7 species of Cærebidæ have no representatives in the National Collection.

The Tanagridæ are a much more numerous family, no less than 377 species being acknowledged as valid in the present volume. Only 20 of this number have no representatives in the Collection. The remaining 357 are very fully represented by 3413 specimens, of which 74 are actual types or typical specimens.

Of the remaining family, Icteridæ, the number of valid species accepted in the present work is 128. Of these 3 only are unrepresented in the National series, while the remaining 125 species are well represented by a fine series of 1409 specimens, amongst which are 12 types of species.

Putting the three families together, it will be found that the total number of species treated of in the present volume is 575, represented in the British Museum Collection by 5494 specimens, referable to 545 species, leaving only 30 species deficient to the Collection, whilst the series of specimens are in most cases very extensive, and serve admirably to show the geographical distribution of each species.

The subjoined list may be useful, as showing the progress made with this important work:—

				Species known.	Species in B. M.	Specimens.
I.	1874.	Accipitres.	R. B. Sharpe.	377	326	2466
II.	1875.	Striges.	R. B. Sharpe.	190	153	1090
III.	1877.	Coliomorphæ.	R. B. Sharpe.	367	315	2014
IV.	1879.	Cichlomorphæ, pt. i.	R. B. Sharpe.	539	443	2520
V.	1881.	Cichlomorphæ, pt. ii.	H. Seebohm.	344	303	2560
VI.	1881.	Cichlomorphæ, pt. iii.	R. B. Sharpe.	407	315	1508
VII.	1883.	Cichlomorphæ, pt. iv.	R. B. Sharpe.	687	548	3942
			Carried forward	2911	2403	16,100

				Species known.	Species in B. M.	Specimens.
			Brought forward	2911	2403	16,100
VIII.	1883.	Cichlomorphæ, pt. v., and Certhiomorphæ.	Hans Gadow.	402	337	2944
IX.	1884.	Cinnyriomorphæ.	Hans Gadow.	355	291	2450
X.	1885.	Fringilliformes.	R. B. Sharpe.	448	396	4590
XI.	1886.	Fringilliformes.	P. L. Sclater.	575	545	5494
				4691	3972	31,578

Assuming the number of known species of Birds to be about 11,000, and the same ratio of species to a volume to be maintained, it will require at least 15 more volumes to complete the work. Of these Mr. Sharpe is, we believe, hard at work at two (vols. xii. and xiii.) to contain the Fringillidæ, Ploceidæ, Sturnidæ, and Alaudidæ. Sclater has undertaken another volume (Tyrannidæ and Cotingidæ).

75. *Shufeldt on the Skeleton of* Geococcyx.

[The Skeleton in *Geococcyx*. By R. W. Shufeldt. Journ. Anat. & Phys. 1886, p. 244, pls. vii.–ix.]

Dr. Shufeldt describes the skeleton of *Geococcyx californianus* in his usual thorough and accurate style, and illustrates its various bones in three excellently drawn plates. We hear with concern that this fine species is now becoming rare in localities where it was formerly abundant, owing to the great demand on the part of collectors for the "Roadrunner."

76. *Vorderman on the Birds of Mount Salak.*

[Bijdrage tot de Kennis der Avifauna van den Berg Salak (West-Java) door A. G. Vorderman. Natuurk. Tijdschr. v. Nederl. Ind. Deel xlv. Afl. 3.]

Mount Salak is one of the extinct volcanoes of Western Java, which attains a height of some 6700 feet. Mr. Vorderman's researches have made him acquainted with 151 species of birds inhabiting this mountain at various elevations. Of these he gives us a list with many remarks. One species, *Brachypteryx salaccensis*, is described as new. The species met with in the highest zone were the rare *Scolopax saturata*, *Psaltria exilis*, *Æthopyga eximia*, *Garrulax rufifrons*, and *Ptilopus porphyreus*.

XXXVIII.—*Letters, Announcements, &c.*

We have received the following letters addressed to the Editors of 'The Ibis:'—

Sirs,—I have been always puzzled by the name of *Strix flammea,* given by Linnæus to the Barn-Owl, as I could never understand why a bird which has not the slightest sign of the flame-colour should have been called *flammea.* Quite lately, looking into Gesner's celebrated work 'De Avibus,' I have found what I think may be the explanation of how it was that Linnæus used that name, which really is very inappropriate when we take it to mean the colour of flame, as Mr. Wharton has done in the 'Ibis' List of British Birds (p. 85).

Gesner, in the above-mentioned work, treating of the Barn-Owl, "De altero genere Ululae, quod quidam *flammeatum* cognominant," after having given a figure of it, wrote as follows:—"Figura haec est generis cujusdam ululæ, quod Germani circa Argentoratum vocant Schleyereul, id est *Ululam flammeatam,* quod nescio quomodo plumis circa faciem mulieris peplo seu *flammeo* obvolutæ caput et faciem referat."

From this it appears to me very probable that Linnæus wrote *flammea* instead of *flammeata,* thinking that *flammea* could be used like *flammeata,* to mean enveloped in a veil; and if I am right, *flammea,* in Linnæus's mind, was not connected with *flamma=flame,* but with *flammeum* or *flameum,* the nuptial veil, which was of a crocus or yellow colour.

Yours, &c.,
T. Salvadori.

Turin, Zoological Museum, May 5th, 1886.

Sirs,—I have the pleasure of informing you that Dr. Julius von Madarász, of Budapest, and I have the intention of publishing a monograph of the Pipridæ, with coloured plates from the pencil of Herr von Madarász, representing all the known species.

The work will be issued in about ten parts, in 4to, each containing six plates, with corresponding letterpress. The first part will appear next September. The price of each part will be twelve florins.

Yours, &c.,
Pelzeln.

Sirs,—In my paper on *Trachyphonus* (*antea*, p. 109) there is a misprint, which I beg of you to allow me to correct. Under *Tr. boehmi* is given, as a locality, "Abdul Gindi, (Mus. Paris)." Now Abdul Gindi is the name of an Egyptian person, not of a locality. M. Oustalet informed me that the specimen in question was obtained from Abdul Gindi.

Yours, &c.,
G. Hartlaub.

Bremen, 20th April, 1886.

74 Jermyn Street, St. James's,
May 17th, 1886.

Sirs,—I have lately returned from a pleasant two months' sojourn in Egypt and at Athens, during which a few ornithological facts came under my notice which I think worth recording in 'The Ibis.' I left Naples on 25th of January last by an Italian steamer bound for Malta. On the morning of the 27th I found myself in the harbour of Catania, with a few hours to spend on shore. I went at once to the bird-market, and there saw no less than ten Purple Gallinules (*Porphyrio cæruleus*) exposed for sale, which the vendors told me came from the *pantani*, or marshes, a few miles to the south of Catania. About two hours later I went back to the market, before returning to the steamer, and found that two more Porphyrios had been brought in. I bought two of the best specimens for a franc each, took them with me to Malta, and there skinned them.

After staying a week at Malta I went by P. & O. steamer to Port Said, and through the Canal to Suez. In the Canal

I was struck by the vast number of Gulls which closely followed our ship, and scrambled for pieces of bread which I amused myself by throwing to them. I was also struck by the fact that the majority of these Gulls were *Larus canus,* a species I had never previously met with in Egypt. Mixed with these were a smaller number of *Larus leucophæus* and *Larus ridibundus.* I also saw a few pairs of *Larus ichthyaetus,* but these majestic birds did not condescend to follow our ship or take any notice of the bread thrown to their smaller relatives.

At Suez, where I stayed two days, I noticed the same absence of Passerine birds as on former visits; the ubiquitous Sparrow and the obtrusive Grey Crow (*Corvus cornix*), which swarm in all other parts of Egypt, were nowhere to be seen; the only Passerine birds were *Motacilla alba* and *Corvus umbrinus,* which last species is, I think, more abundant at Suez than anywhere else in Egypt. Thence I went to Cairo, and stayed there from February 12th to March 1st, when I went up the Nile to Thebes. At Cairo I used frequently to spend the half hour before and the half hour after sunset in the beautiful Esbekyeh garden. In the centre of this is a lake, over which, up to sunset, a quantity of Swallows, *Hirundo savignii,* were always flying about, catching insects. Evening after evening I used to see a large Sparrow-hawk, *Accipiter nisus,* which, from its size, I judged to be a female, make its appearance just before sunset, while the Swallows were still flying about. Of these it never took any notice, having perhaps found out by experience that they were more trouble to catch than they were worth; but it would perch on the top of some tree commanding the lake and wait till the sun had set and the Swallows taken themselves off, and in their place a swarm of small Bats came on the scene, flitting about over the lake. Now was the time for the Hawk's supper, and it used to dash in among the Bats, catch one in an instant, take it off to a tree, and there eat it; and it generally found time to catch a second one before it got too dark for further operations. I once went under the tree where the Hawk was eating its Bat, and picked up one of the Bat's wings which it had dropped. So far as I know, this Bat-catching propensity of the Sparrow-hawk has never before been recorded.

The trees round this same lake in the Esbekyeh garden were frequented by numerous large Fruit-bats, which began to move about half an hour after sunset, and which I never saw elsewhere in Cairo, or in any other part of Egypt. This fact, although not exactly ornithological, is not altogether devoid of interest, for I fancy that the presence of a Fruit-bat in Egypt has escaped the notice of most recent travellers in that country.

The Red-breasted Goose, *Bernicla ruficollis*, is not now found in Upper Egypt, and, with the exception of one specimen obtained by Mr. Stafford Allen at Alexandria, I do not know of any instance of its having been seen anywhere in Egypt in recent times. I was therefore much interested in finding this species accurately and repeatedly represented in the tombs of the kings at Thebes, the figures of it being carved in the limestone walls of the tomb, and accurately coloured, so that there can be no doubt whatever as to the species intended to be represented*.

I left Egypt on March 24th, and went direct to Athens, where I stayed ten days. The ornithological fact that struck me most at Athens was the great number of Ravens, *Corvus corax*, in and around the city. They roost in the precipitous sides of the Acropolis, and may be seen flying over the town all day, but more especially towards evening. Returning home one afternoon from a drive to Eleusis, I saw, just before sunset, at least thirty or forty Ravens all together, flying round a rocky hill about two miles from Athens, on which they no doubt roosted. Never in any country have I seen the Raven so abundant as at and around Athens.

Yours, &c.,
E. Cavendish Taylor.

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* [*Cf.* Yarrell's Brit. Birds, ed. 4, vol. iv. p. 284.—Edd.]

Smithsonian Institution, Washington, D. C.,
May 14, 1886.

Sirs,—I wish to thank you for your very kind review of my 'Ornithological Explorations in Kamtschatka and the Commander Islands.' At the same time I take the liberty to protest against a remark in the footnote (*anteà*, p. 202), referring to me as "*a stickler for correct names*" in connection with "corrections" of a philological nature. It is true that I am endeavouring to use names which are correct *ornithologically*, and in that respect I may be "a stickler;" but my stand in regard to philological corrections of names *already given*, is clearly expressed in the following quotation from a paper written by me five years ago:—

"As to the rules of the nomenclature, it seems to me that the best are those which present the smallest number of exceptions, and which, once adopted, give the least occasion for disputes. I therefore propose to use the oldest available name in every case, where it can be proved, and to spell it exactly as it was spelled when published for the first time, notwithstanding incorrect derivation, barbarous offspring, *error facti*, &c.

"The significance of a name, by means of the sound and the appearance, is to give a conception of the named object as being different from all other objects. If it, at the same time, can be formed so that it indicates one or another chief property of the object, then it is the better. The main point is, however, that we, by hearing or seeing the name, will get an idea of the object as being different from any other.

"That names which do not signify anything cause no inconvenience worth mentioning is evident from the numberless specific names, indicating a quality common to all the species within the same genus, e. g. *cinereus, fuscus*, &c. It may be rather tedious that the names are incorrect; but the simply endless number of incorrect names with which we daily work without feeling especially troubled, and which probably no one intends to change or correct, shows better than anything else how unimportant the corrections and improvements are for facilitating the work. I think that we may very soon agree that many corrections have caused more trouble than relief—as, for instance, such improvements as *Heniconetta* for *Eniconetta*, and the like—and that they only have succeeded in swelling our lists of synonyms.

"The only rule which can be carried out with safety is the use of the oldest name, without regard to its appearance, derivation, or signification. If this be adopted, most differences would disappear from the nomenclature, and it is in fact the only rule which is able to establish a passable uniformity in place of the present variety. Once universally accepted and put to practice, it would save much time, labour, and dispute; disputes concerning year and date may easily be settled, while all philological and linguistic disagreements may be thereby avoided. The question as to which species one or another name is to be referred has nothing to do with the rules of nomenclature, and is therefore liable to come up at any time."—*Proc. U. S. Nat. Mus.* v. 1882, p. 28.

My proposition was adopted by the Committee of the American Ornithological Union on Classification and Nomenclature, and is embodied in Canon XL. of the Code ('Code and Check-List, A. O. U.,' 1886, p. 51).

I am, yours truly,
LEONHARD STEJNEGER.

[We regret that we have unintentionally misrepresented Dr. Stejneger's views in the criticism above noticed.—EDD.]

Reeves's Pheasant at Home.—The 'Field' of May 15th contains a letter from Mr. E. Fitzgerald Creagh, with an interesting account of his chase after *Phasianus reevesi*.

"It was from Tchang, a post at the head waters of the Yangtzû, the great river of China, or rather where that river leaves its gorges, that I started with the stream to a large valley where I knew Reeves's Pheasants had been seen. It is useless to ask any questions of the country folk, who will always say yes. I therefore landed and walked along a wide valley, with high perpendicular mountains of conglomerate on either side, and beetling over small woods of cypress. The birds live on the berry of this tree, and fly from one wood to another. They will never show themselves if they can avoid it, and, through their great fleetness when running, steal away before the dogs. Sometimes, however, when taken by surprise, they rise, and then only by great caution can a single sportsman hope to get them. Surrounding the small woods with several guns is the best way to bag them. I think they drive away the common Pheasant, for I have never seen them together. This may, perhaps, be due to the fact of their living on different food. I had with me at the time a spaniel and a red Irish setter, and, as the day was fine and clear, walked on quietly until I came to what appeared a good country. The hills here were lower, and the wood fairly dense, but free of undergrowth. A woodcutter told me he had seen several Pheasants a few days ago, but could give me no further information, so, tying up my spaniel, I determined to work quietly along with the setter. Although it was January the day was hot, and I was obliged to divest myself of my coat as I struggled up the hill. I worked along the lower part without coming on any scent. Suddenly the setter got very busy, and moved along, showing me that he had some large game. I followed on as well as I could over the broken ground. False scent, back again; then the dog took a turn up the almost perpendicular rock. Good gracious! thought I, how can birds get up there and leave any scent? They had evidently helped themselves with their wings. I was determined to follow, and brought the setter back to a place where we succeeded in getting on to the upper ledge after a little scrambling. Having arrived at the top, as I had anticipated, we soon came on the scent again, and away went the dog, very cautiously setting every now and again. Just ahead of us now was a stone wall. I was very much afraid that my game would rise just as I was getting over, so I made all preparation for a surprise, and at the moment the setter, who had passed the wall, was at a 'dead set.' I knew there were several birds or some larger game by the general activity and caution shown by the dog. I was soon over the wall, ready for anything. I surveyed my position in a moment. Below me was long grass, on the ledge I had left some thick and high trees, on my right a hill, also with long, rank grass, but no wood. I moved forwards a few paces, but the dog was there like a marble statue. I was very badly placed, for I could not see where the game could be. Up got six Reeves's Pheasants, splendid birds. I felt certain of two. I am sorry to say, however, I only succeeded in bagging one, which went rolling down the hill in his last struggles. I bounded after him, afraid the dog would mouth the beautiful plumage. The bird I had bagged was a cock, measuring 5 feet 4 inches from the bill to end of tail-feathers. From the time I first came on their scent the distance over which I worked must have been a mile; I was therefore glad of a rest. The birds had flown in all directions, so there was no use marking them. My left barrel had been ineffectually discharged at a fine cock, which flew straight across the valley."

Radde's Scientific Expedition in Transcaspia.—The 'Times' informs us that M. Radde, the traveller and naturalist now engaged in a scientific tour in Central Asia, has written the following letter to the Russian paper 'Novosti,' dated Askabad, April 6 (N.S.) :—"At first the weather was not favourable. The spring was late this year by at least three or four weeks. Up to the present all my investigations have only resulted in discovering 35 specimens of phanerogamic plants. Our collection of birds consists already of 150 different kinds, among which a *Picus scindiacus* forms a new addition to Russian fauna." The 'Novosti' goes on to state that M. Radde made several excursions from Askabad both into the desert and to the mountains. At Hennab, on the Persian frontier, the expedition encountered a violent snow-storm. M. Radde will reach Merv in the course of the present month (May), and will then examine the mountains between the Murghab and Tejend. In July he will return to Askabad *viâ* Sarakhs, and then proceed through Khorasan to Meshed. Before his final return to Europe M. Radde will visit Teheran.

Mr. H. O. Forbes in New Guinea.—The last account of Mr. H. O. Forbes in South-eastern New Guinea states that he was in camp at Sogeri, fifty miles from Port Moresby, and intending to ascend Mount Owen Stanley when the season permitted.

News of Mr. H. H. Johnston.—Mr. H. H. Johnston has settled himself in Mondole or Mondoli Island, in Ambas Bay, as H.B.M. Vice-Consul for the Cameroons, and sends us a good account of his health and prospects. Writing April 13th, he tells us that he has already found a collector, and is purposing to send him up the Cameroons with a staff of several natives as assistants as soon as possible. The only birds yet obtained on this mountain, so far as we know, are those collected by Sir R. Burton during his ascent in 1861, and described by George R. Gray in the Annals of Nat Hist. for that year (ser. 3, vol. x. p. 443). Where such curious birds as *Strobilophaga burtoni* occur we may reasonably expect further novelties.

Rediscovery of Platycercus unicolor.—Captain F.W. Hutton writes to us that a specimen of *Platycercus unicolor,* Vigors (P. Z. S. 1831, p. 24), has been received at the Christchurch Museum, from Antipodes Island, off the coast of New Zealand. This species was based by Vigors on a single specimen living in the Zoological Society's Gardens in 1831, and subsequently transferred to the British Museum. For

55 years, therefore, its exact habitat has remained unknown, and no second specimen has been obtained.

Anniversary Meeting of the British Ornithologists' Union, 1886.—The Annual Meeting of the British Ornithologists' Union was held at 6 Tenterden Street, on Wednesday, the 19th May, at 6 P.M., Mr. SCLATER in the Chair.

The Minutes of the last Meeting having been read and confirmed, the Committee presented the following Report:—

"The Committee are glad to be able to point out that, in spite of the existing widespread depression, the British Ornithologists' Union maintains its prosperity. During the past year, owing to the exercise of rigid economy, the expenses connected with the publication of the Journal have been kept well within bounds, the remainder of the debt incurred through the publication of the 'List of British Birds' has now been entirely liquidated, and there is now a balance in hand. Moreover, the stock in hand of the above-mentioned list is an asset that must not be lost sight of. The sale of the List having recently been small, your Committee suggest that, in order to assist in clearing off the stock, any Members of the B.O.U. should be permitted to purchase one copy of the List for 5*s*., or three copies for 10*s*. 6*d*.

"At the last Anniversary Meeting the number of Members of the B.O.U. amounted to 174: viz. 146 Ordinary, 1 Extraordinary, 8 Honorary, and 19 Foreign Members. At the present Anniversary it has been increased to 183: viz. 155 Ordinary, 1 Extraordinary, 8 Honorary, and 19 Foreign Members.

"The Candidates for admission at this Anniversary are 17, of which 15 are proposed as Ordinary, 1 as an Honorary, and 1 as a Foreign Member."

The Report having been agreed to and adopted, the following new Ordinary Members were balloted for and declared to be duly elected:—Lieut. Harold Stuart Ferguson, of 16 Albemarle Street, W.; The Earl of Gainsborough; William Graham, Esq., Manor House, Crayford, Kent; Harold Littledale, Esq., B.A. &c., Vice-Principal of the College, Baroda; The Rev. Hugh Alexander Macpherson, of 3 Kensington Gardens Square, W.; John Guille Millais, Esq., F.Z.S., of 2 Palace Gate, Kensington, W.; Howard Hill John Nicholls, Esq., M.R.C.S., of The Moat, Eastbourne; E. Cambridge Phillips, Esq., of The Elms, Brecon; E. Lort Phillips, Esq., of 22 Bolton Street, Piccadilly, W.; William Carstairs Shaw, Esq., of the Bank of Madras, Ootacamund, India; Lieut. Horace A. Terry, of the 43rd Light Infantry, India; Edward Hamilton, Esq., M.D. &c., of 40 Portugal Street, W.; Harry Berkeley James, Esq., F.Z.S. &c., of Aldridge, Walsall; George Muirhead, Esq., of Paxton, Berwick-on-Tweed; and Major H. Wade Dalton, of the Middlesex Regiment, Aldershot. Mr. Thomas Ayres, of Potchefstroom, Transvaal, was also elected an Honorary, and Dr. Julius von Madarász, of the National Museum, Buda-Pesth, a Foreign Member of the B.O.U.

The President and Secretary having been re-elected, Mr. Edward Cavendish Taylor was elected on the Committee in the place of Mr. O. Salvin, who retired by rotation. Thus the Officers for the year 1886–87 are as follows:—

President.

The Right Hon. Lord Lilford.

Secretary.

H. E. Dresser, Esq.

Editors.

P. L. Sclater, Esq.
Howard Saunders, Esq.

Committee.

W. T. Blanford, Esq.
F. DuCane Godman, Esq.
Edward Cavendish Taylor, Esq.

It was then suggested by Mr. R. B. Sharpe that a notice should be sent round early in the year announcing the date for the Annual Meeting, so that Members living abroad should have ample time to propose Candidates; and the Committee promised to take this suggestion into consideration.

A discussion ensued as to whether the B. O. U. could in any way cooperate with the Selborne Society in trying to put a stop to the wholesale destruction of birds for the purpose of feminine decoration. A proposal by Mr. R. B. Sharpe for the appointment of a Committee of the B. O. U. to "consider whether any and what steps should be taken to stop the undue destruction of wild birds" was put to the Meeting and lost.

A vote of thanks to the Chairman, as also to Captain Shelley for the use of his room, was carried unanimously.

The Meeting then adjourned, and the Annual Dinner, held at the Café Royal, was attended by twenty-eight Members and guests.

OBITUARY. *Prof. E. von Boeck, of Cochabamba.*—We much regret to hear from Dr. W. Blasius of the sudden death of his correspondent, Prof. Eugen von Boeck, Director of the Central School of Bolivia, and Member of the Permanent International Ornithological Committee. Prof. v. Boeck died at Cochabamba on the 30th of January last, of an attack of cholera. One of his first ornithological articles was a paper on the Birds of Valdivia (Naumannia, 1855, pp. 494–513), the last those on the Birds of Cochabamba (*vide suprà*, pp. 365, 366). At the time of his decease Prof. v. Boeck was engaged on a translation of Taczanowski's 'Ornithologie du Pérou.' Under very disadvantageous circumstances the Professor exerted himself in every way to advance our knowledge of South-American ornithology.

Heer François P. L. Pollen.—We are informed that Heer Pollen, the explorer of Madagascar in company with D. C. Van Dam, and fellow-author with the late Prof. Schlegel of the volume of Mammals and Birds of the 'Recherches sur la Faune de Madagascar' (1868), has recently died at Scheveningen, where he was German Consular Agent.

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XXXIX.—*On the Wings of Birds.* By C. J. Sundevall.

(Plates X., XI.)

[Translated from the original Swedish of the 'Kongl. Vetensk.-Akad. Handlingar,' 1843, by W. S. Dallas, F.L.S.]

Introduction.

As the differences in the feather-covering of the wings of birds appear to be of the very greatest significance in the systematic arrangement of that class, which otherwise seems to present so few, or rather no certain, characters for the larger divisions, a somewhat detailed description of them may possess no little interest. People seem not to have supposed, or to have been unwilling to believe, that such apparently accessory parts as feathers could furnish reliable indications of the internal organization of the different groups of birds, which they sought in vain from other organs; at least we can scarcely explain in any other way why the very remarkable differences in the structure of the wings were so long neglected, although they are among the very first which must strike the eye in the external examination of birds. It is, however, a truth that every external part of an animal can furnish equally certain indications of affinity or distinction between species as an internal part of the body, and that in this respect no order of precedence can be established *a priori*. A character certainly does not possess greater value merely because it is derived from the relations of internal parts, of which the many exceedingly unnatural systematic classifications, founded upon so-called anatomical characters, are a clear proof*.

Thus what is characteristic may just as easily be overlooked in the internal as in the external parts; but, should it be correctly grasped, every part of an animal's surface or covering ought to furnish characters just as reliable for the animal's affinities as the inner or so-called nobler parts; for the cause, predetermined in the egg, which makes an animal belong to one or the other class, order, family, species, &c., has continued to act uninterruptedly throughout the whole development upon every part of the animal's body, both external and internal, and has necessarily left behind some impress which may be distinguished from all others. But as different causes must produce different effects, it becomes impossible that any particular part in an animal can be exactly similar to a part in another animal of a different order, genus, &c. From a physiological point of view, indeed, the internal parts may be regarded as more important than the external; but zoographically we must regard the external parts as possessing an equal if not greater value, because the characters derived from them can be easily recognized and examined in the specimens of natural products which usually occur, which is not the case with those founded upon the internal parts; and I venture to maintain that only external form-characters ought to be employed in zoographical diagnoses, and also that the external parts always present such characters as express quite clearly the affinities of the species, although these characters may not always lie open to superficial observation. The wing-feathers may therefore furnish just as important characters as any other part of a bird's body, and an accurate knowledge of them may be of the greatest value in ornithology.

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* *E.g.* the classifications of the Arachnida from the organs of respiration, the divisions in the class Vermes in accordance with differences in the nervous system, the arrangement of the Gasteropoda according to the branchiæ, &c.

The history of this knowledge is not very extended. It includes in the first place the terminology adopted by Linnæus, which is to be found systematically set forth in 1758 in the 'Systema Naturæ,' ed. x. p. 79, and still more in detail in 1766 in ed. xii. pp. 110–111 *.

This terminology is extended and improved by Illiger in his well-known 'Terminologie,' published in 1798 (translated into Swedish by Marklin), and reproduced in the same words in his 'Prodromus Systematis Mammalium et Avium' (1811). There was here no question of anything but a terminology, and therefore scarcely anything was added serving essentially to advance the knowledge of the structure of the wing; merely a heap of new names adopted:—Pteromata, Ptila, Campterium, &c. Illiger was not sparing of new terms, and adopted without hesitation, besides the necessary ones which ought always to be retained, a great number which are not necessary, and which I must therefore regard as superfluous. Of those which relate to the wings I shall speak hereafter †.

Some subsequent attempts do not properly deal with the structure of the wing in its entirety. This applies to Isidore Geoffroy St.-Hilaire's recently published memoir in his 'Essais de Zoologie générale' (Paris, 1841), in which the terms *obtuse* and *aigüe* (obtuse and acute), with the superadded more exact qualifications *sur* and *sub*, are adopted to indicate that the first, second, &c. feather is the longest. This adoption of terms in place of definitions may, indeed, be often valuable and useful; but it seems to me unnecessary, for when exactitude is required we must still always say, for example, *the first feather is the longest,* or *the second feather is the longest,* &c., which is certainly more definite than to say *the wing is very acute* (*suraigüe, acutissima*) or merely *acute* (*aigüe, acuta*).

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* "Alæ . . . . tectæ pennis, demum *Tectricibus* primis secundisque, postice ciliatæ *remigibus*, &c. *Remiges primores* x.: 1–4 Digiti, 5–10 Metacarpi; *Secundarii* 10–20 s. 28 Cubiti; nulli vero Brachii; at *Alula* spuria pennis 3 s. 5 Pollici insidet." It is impossible that such a clear and complete description could be given in a briefer form.

† Of course it is not my intention to censure the terminology of this distinguished man, drawn up as it is in a truly classical spirit; but we should, as far as possible, avoid making terminology into a special study, which burdens the memory, and therefore we should follow the prevalent example of the general usages of language, and adopt *termini technici* only for parts or ideas which are never or rarely employed in diagnosis, and not for those in the naming of which we can avail ourselves of the ordinary mathematical terms (which must of course be used in their proper signification) or of other generally known and accepted terms (*e.g. margo alæ*, instead of *campterium*, Illig.).

Nitzsch's remarkable work 'System der Pterylographie,' as is well known, threw a new light on the feather-covering of birds in general; but as regards the structure of the wings, we find in it scarcely any statements except as to the number and structure of the remiges. The coverts are noticed only in a few places, and the number or constitution of their series, their presence or absence, distance apart, &c. are, remarkably enough, not mentioned at all.

Those who have seen in the bird's wing merely a flying-machine and studied it in this aspect have had the least influence of all upon our knowledge. It must be remarked that the wing always occurs in birds, but that it is not always an organ of flight.

By a comparison, made about Christmas 1830, of the wings in a freshly killed *Strix bubo* with those of *Emberiza citrinella,* I first obtained a notion of the considerable differences which exist between those organs in different genera. The changed position of many series of feathers and the great difference in the number and length of the coverts especially attracted my attention*. A continued investigation soon showed that these differences were of the greatest importance as external characters for the primary divisions of the class, and as such they were set forth in my "Ornithologiska System," prepared in the year 1834, and printed in the 'Vetenskaps-Akademiens Handlingar' for the year 1835. Nevertheless I had not then grasped the whole importance of these characters as external distinctions between the birds which do or do not possess singing-muscles on the inferior larynx, for I still believed that I found exceptions in the genera *Picus, Upupa,* and *Menura.* Later investigations have shown that these genera do not deviate from the general rule, and that the presence or absence of the so-called singing-apparatus is indicated by two dissimilar structures of the wings. After the year 1834 other studies occupied my time, so that this subject did not again come under examination until the report of the statement of Keyserling and Blasius of the (in their opinion) first positive external characters for Song-birds, caused the subject to be again taken up in the zoological "Årsberättelse" of the Academy of Sciences, printed in 1841 (p. 126). As I soon afterwards, in the same year, undertook a journey into foreign countries, I communicated the matter to several individual zoologists, and also to the Meeting of Naturalists at Brunswick. The Transactions of that meeting, however, contain no more than had already been made known in print in 1835. A somewhat more detailed exposition of the subject was first made before the Meeting of Scandinavian Naturalists in Stockholm in 1842, and this is printed in the Transactions of that Meeting (p. 685). In the present paper I venture to give a description of the bird's wing somewhat more in detail.

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* It must be stated that Herr W. v. Wright had about the same time noticed these peculiarities in the wings of birds, of which his remarkably correct figures in the illustrated work 'Skandinaviens Foglar' bear witness. But we did not know of each other's discoveries until some years afterwards.

FIRST CHAPTER.

General Review.

The bird's wing consists of the following parts :—

1. The anterior extremity, namely :—*Humerus* (upper arm, Pl. X. figs. 1, 2, &c., *a*), *cubitus* (forearm, *b*), and *hand* (manus, *c*), which again is composed of the *carpus* (wrist, *v*), *metacarpus* (middle hand, *c*), *first* phalange (*y*) and the *second* (*z*), with the *pollex* (thumb, *d*).

Although it is not my intention here to describe anything but the exterior and its coverings, it may nevertheless be stated in passing that the two bones of the forearm, the *ulna* (fig. 1, *g*) and the *radius* (*h*), are always separate in birds, and the former the strongest. The *carpus* has only two very small, free bones (*v* and *w*); the others appear to have either entirely disappeared or become coalesced with the following part (at *x*). The large *os metacarpi* (*c*) belonging to the only finger developed has at its base a large tubercle (*x*), which seems to indicate coalescence with a part of the carpus and the metacarpus of the thumb. In some birds this tubercle is produced into a spine (spur) covered with horn; and it always bears on the anterior (radial) side the small *thumb* (*d*), composed only of a single joint. Along the posterior (ulnar) side of the bone lies an *os metacarpi* (between *f* and *v*) of a third finger; but this is amalgamated with the former at the two ends, and only bears at its apex a small phalange (*f*) concealed under the skin. The middle finger consists of two joints (*y* and *z*).

At the base (*h*) the humerus is more or less enclosed between the muscles, so that, although it does not project entirely, as in man, beyond the curvature of the surface of the trunk, it always does so partially ($\frac{2}{3}$–$\frac{1}{2}$). The *cubitus* and the *hand*, which bear the true wing-feathers, are strongly compressed and flattened in consequence of the form of the bones, as well as of the position of the muscles and structure of the skin.

In the angle behind the humerus the muscles and skin, as in man, form two more or less distinct folds, which bound the *axilla* (fig. 2, *i*); the anterior fold is formed by the pectoral muscles, the posterior one by the back and the margin of the scapular muscles.

In the anterior angle, between the humerus and cubitus the skin does not lie, as usual, closely upon the muscles and bones, but it forms there a large fold (*e*), the *antebrachial fold* (plica antebrachialis). When the wing is folded up, this cutaneous fold would hang loosely down like a bag, if it were not drawn together by a very remarkably constructed elastic sinew, which issues from a muscle in the shoulder (in front of *h*, fig. 6) beside the m. deltoideus, and runs within the whole anterior margin of the fold as far as the carpus, where it spreads out and terminates in the skin.

Along the hinder margin of the cubitus and hand the skin likewise forms a large, but firm and hard fold (*f, g*), in which the large wing-feathers are seated. Indeed it is by the considerable development of the feathers that the skin is drawn out into a fold which surrounds the roots of the feathers.

The differences in the length of the different joints of the wing will be referred to further on, under the head of the Remiges cubitales.

2. The wing consists of the feathers which clothe the anterior extremity, in the skin of which they are seated arranged in rows (series) which are parallel to the bones and to the posterior margin of each individual joint.

The feathers are generally directed backwards, so that each series covers that lying immediately behind it (or at least its root). In general there are about the same number of feathers in each series, for they are arranged in quincunx, so that each feather is situated in the middle of an interval in the two nearest series. Their points of insertion may therefore form rows in three different ways (see figs. 2, 6); but the feathers themselves form series only in one way, because all those which are placed in the same series are nearly of the same size and nature, while those in different series most frequently differ considerably from each other (see figs. 3, 4, 7, 8). The smallest and softest are placed in front; towards the posterior margin of the wing the feathers increase in size and firmness, so that the quill-feathers which occupy the posterior margin itself are the largest of all. In the enumeration of the series we must therefore necessarily begin with the quill-feathers and call them the *first series*; the second, third, &c. follow in order forwards. The foremost series are so small and indistinct that one can hardly distinguish them unless we proceed in order from the posterior ones.

In each series we must call those feathers *outer* (externæ) which are placed nearest to the apex of the wing; and *inner* (internæ) those which are situated nearer to the base of the wing and the body. As the outermost feathers are always the easiest to find, we must commence the ordinal numbers (1, 2, 3, &c.) from them.

In *Aptenodytes* (which, at least as regards the plumage is decidedly the lowest of all forms of birds) all the wing-feathers are very small and hard, and have an external resemblance to scales, which are cleft at the margin into a fringe. Like the body-feathers in the same genus, they cover the surface uniformly, without interspaces, like the scales of fishes and reptiles, and form on both sides from 25 to 30 rows, without any difference except that those towards the quill-margin of the wing are somewhat larger, so that they more distinctly cover the roots of the next row.

In all other birds the number of series is much less (at the utmost 12 on each side); they leave considerable interspaces, and are of quite different nature.

As regards the different series, we may accept the following kinds of wing-feathers :—

(1) *Wing-quills* (Pennæ alares, Remiges, Linn. & Ill.) are only a single row, which are seated in the posterior margin of the wing and are the largest of all. All the others are usually named *coverts* (tectrices).

(2) *Large coverts* (Tectrices majores; Pteromata, Ill.), a series of feathers which lie immediately over the roots of the quill-feathers, inserted in the skin behind the muscular layer.

(3) *Second series of coverts,* which are also seated in the fold of skin behind the true arm or hand. They often show the peculiarity that they lie in a reverse position to the preceding, as to which more hereafter.

(4) *Small coverts* (Plumæ or Tectrices minores, brachiales, cubitales, digitales, so-named according to the part upon which they are seated). They form from three to five series, and are placed upon those parts of the skin which enclose the bones and muscles of the limb. They are wanting upon the cubitus in all birds which possess singing-muscles at the lower larynx, but occur in all other birds.

(5) *Arm-fold feathers,* or the anterior small feathers of the wing (Plumæ antecubitales, or Tectrices minimæ), are seated in several rows upon the fold of skin in front of the arm itself.

These different kinds of feathers are :—

Upper (superiores), when seated upon the upper side of the wing, and

Lower (inferiores) upon its lower surface ; and further from the different parts of the arm :—

Upper-arm feathers (humerales) on the humerus,

Forearm feathers or merely *arm-feathers* (cubitales) on the cubitus, and

Hand-feathers, "*Lash-feathers*" (Primores, L.), on the hand.

Upon this terminology we shall have something more to say further on. It is only upon the cubitus that all the different kinds of wing-feathers occur together.

The *structure of the feathers* need not here be described; it does not belong to our subject, and is treated in detail in Nitzsch's 'System der Pterylographie.' Nevertheless a terminology of their external structure may not be superfluous in this place, which will give the opportunity of proposing some small changes in the terms employed by Nitzsch in the above-mentioned work, which he did not himself complete.

The external parts of the feather are as follows :—

1. *Calamus* (the quill-tube, fig. 12, *a*), the transparent, horny part, which is fixed in the skin.

2. *Rhachis* (the shaft, *b*), the part filled with white pith, which bears the vane. On the whole outer side (obverse side) this is clothed with a direct continuation of the calamus in the form of a sharply defined horny lamella. The whole of this side is somewhat convex or flat, without any depression, and scarcely elevated above the vane. The inner or opposite side is considerably elevated above the vane, covered with a peculiar, thinner, and sharply-defined horny lamella, and has a longitudinal impressed line which terminates in the

Umbilicus (*d*), or the opening into the interior of the tube. This opening is very small, and is closed by a projecting point of the dried membranous parts remaining in the tube. Fig. 12 shows a small feather, seen from the reverse side.

Scapus (feather-spool; "stjelk," Markl.) is the name given by Illiger and Nitzsch to the calamus and rhachis together.

3. *Radii* or R. primarii (vane-rays), which issue from the rhachis on both sides, close up to and from the horny lamella of the upper surface. Together they form the *vane* (pogonium). They are in general fine, filiform, and nearly cylindrical; but in the large quill-feathers they are flattened, in the form of narrow lamellæ, which, however, are somewhat prismatic, nearly like a knife-blade, so that the thinner, smooth-edged margin is turned towards the reverse side of the feather. The outer margin, which is somewhat thicker, is furnished on both sides, both above and below, with secondary vanes (see No. 4). Nitzsch calls the vane-rays *Rami* (branches), which name is far less suitable than the denomination *radii*, long previously adopted by Illiger.

4. *Radii secundarii* (secondary vane-rays, vane of the second order) issue on both sides from the outer margins of the Radii primarii: they issue from the outer side of the vane-rays, just as the latter issue from the outer side of the shaft. These are called *Radii* by Nitzsch; Illiger called them *Radioli* (Terminol. 1269 *h*); the name adopted by me occurs previously in R. Wagner's Lehrb. der vergl. Anat. p. 576.

5. *Ciliæ* (Nitzsch) issue in the same way from the Radii secundarii, and are extremely fine, hair-like, simple, and short. In the middle of one side of the radii secundarii in most feathers they are bent or hooked (hamatæ; they are then called *hami* by Nitzsch), in order that they may firmly seize the radii secundarii of the next radius. This is the cause of the force with which, in most feathers, the vane hangs together. In those feathers which have not coherent vanes, the ciliæ are not hooked.

6. *Plumula accessoria* (accessory plume, *c*) * is a small shaft with its vane, constructed like the larger shaft and vane, which in most small feathers issues from the margin of the

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* Nitzsch calls it the *Hyporrhachis* (under-shaft), which name, however, can only be applied to the shaft of the accessory plumule. It might rather be named *Hypoptilium*. The name *plumula accessoria* presupposes that its parts must be called *rhachis*, *pogonium*, &c., *accessoria*.

quill-tube below the umbilicus like a little duplication. It has been regarded as an appendage, or as a small feather growing upon the larger one; but it should rather be regarded from another point of view as being of exactly the same rank as the larger rhachis, although checked in its growth during development. According to this view there issue from each quill-tube two similar vane-bearing rhachides, and in point of fact we find the case to be so in the Cassowaries, in which the accessory plume is as large and of the same structure as the outer shaft and vane. On the body of *Lagopus* the accessory plume is $\frac{3}{4}$, and in *Falco palumbarius* half as long as the outer rhachis, but in both the vane is downy and not coherent. In all these cases we see distinctly that the umbilicus lies between the two rhachides, and that the latter are raised and furrowed on the opposite sides, so that the grooves of both terminate in the umbilicus, and are as it were a remaining trace of it. The obverse side of the accessory plume is thus turned towards the body; it is furnished with a sharply defined continuation of the quill-tube itself, just like the outer rhachis. The vane in both rhachides forms a single uninterrupted series, and in case the accessory plume is wanting, as in the quill-feathers, the vane follows the whole margin round the umbilicus, like a wreath. In the most highly developed feathers, the quill-feathers and the large covert-feathers, the accessory plume is always wanting, and in some birds it is deficient throughout the whole of their plumage. These are, according to Nitzsch—*Strix*, Linn., *Pandion, Columba,* and a great many of the Coccyges, *Pterocles, Anas,* Linn., and the Steganopodes. In the Song-birds, and in *Aptenodytes,* the accessory plume is quite small, downy, or rudimentary. The feathers of the last have the true shaft very thick.

SECOND CHAPTER.

Special Description of the different sorts of Wing-feathers.

A. *Quill-feathers* (Pennæ alares sive Remiges).

These, as has already been stated, are distinguished from all the other feathers by their size and stiffness. They are seated in the skin along the whole posterior margin of the cubitus and hand, but no true quill-feathers occur upon the humerus. They belong definitely to the upper (outer) surface of the wing, for they always lie with their basal ends outside of the bones and muscles. They are always destitute of accessory plumes.

1. *Remiges primores** ("lash-feathers," figs. 3, 4, 7, 8, *f*), which are seated upon the hand, constitute the most important part of the organ of flight, and exceed all others in size, firmness, the size of the quill-tube, and the shortness and elasticity of the vane. They lie, with the quill-tubes in an oblique direction, strongly attached upon nearly the whole breadth of the wing-bones, and have, in consequence, a very inconsiderable amount of mobility. In number they are usually 10, so that the first is seated upon the outermost (second) finger-joint, attached along its posterior (ulnar) side, less distinctly outwards than the following ones. The second, third, and fourth are placed upon the first finger-joint, and the six following upon the metacarpus (compare fig. 1). The last of them is somewhat longer than the first feather of the arm (*Parus caudatus* constitutes the only exception known to me).

The number of these feathers varies but little; only between 9 and 11. There are 9 of them only in some Song-birds, and this because the first feather disappears (of which more hereafter); and 11 in the genera *Podiceps* (all the Swedish species, also *P. dominicensis* and *philippensis*), *Phœnicopterus*, *Anastomus*, *Tantalus*, *Ciconia* (according to Nitzsch also *C. mycteria*, but not *C. argala*), *Musophaga*, and *Corythaix*, but not in *Schizorhis*, Wagl.†

They vary still more in size, proportions, and form, for

* I employ this name, adopted by Linné, in default of a better one, as expressing their position; for the terms *R. manus*, or *digiti*, or *digitales* are not very applicable, and *manuales* is unsuitable. See also the note on the *R. cubitales* further on.

† In the Diving Ducks (*A. glacialis*, &c.) there is a very small third finger-joint, which has a rudimentary first quill-feather, with its small covert-feather. So also in *Uria troile* and *alle*, but not in *U. grylle* or *Alca torda*.

in most of these respects they differ in almost every genus, and often in species of the same genus, especially among the Land-birds. These differences furnish good characters, and belong to the systematic exposition of ornithology; but we may here notice the following more general conditions. The typical form seems to be that all the ten feathers are of equal length; but in consequence of the way in which they are attached to the hand, the first feather projects beyond the following ones, and thus seems to be the longest, while the following ones appear to get gradually shorter. The wing is then quite acute. This form of wing occurs generally among the lower birds, namely in a great many of the Water-birds (all the Pygopodes and Longipennes; the Tubinares, except *Thalassidroma, Mergus, Fuligula,* and some of the Steganopodes), in more than half the Grallæ (*Charadrii, Strepsilas,* &c., nearly all Tringariæ [Scolopacinæ], though in these often 1=2), but only in a very few others, namely in *Pterocles* alone among the Gallinæ, and in *Trochilus.* In *Cypselus* the second feather is a little longer. In no single true Song-bird is the first feather the longest.

With a higher development of the wing it is instead one of the following feathers (nos. 2–4) that is the longest, while the first is somewhat abbreviated. In those which fly with remarkable rapidity, the second feather is usually the longest (e. g. *Hirundo, Ocypterus, Falco, Merops*); in others the wing is rounded and broad, owing to the third, fourth, or even the fifth or sixth feather being longest; but this last only in short wings. The birds of which the wings are thus rounded and at the same time of considerable length have also very large cubital feathers, and fly remarkably well and steadily (e. g. *Vultur, Aquila, Ciconia*). Only a few Water-birds have the second feather the longest (*Thalassidroma, Anas, Bernicla*), and there are not many that possess rounded wings (*Anser, Cygnus, Carbo, Pelecanus*). Among the Waders the two conditions are already more common; rounded wings occur in *Vanellus,* in all Rallidæ (with *Fulica*), in all Ciconiinæ, *Grus, Otis,* and *Ardea.* In the Land-birds it is the most common condition.

In the Song-birds, without exception, the first feather is abbreviated. In a somewhat higher degree this takes place in two different ways. In a part of them some of the feathers (the anterior) are gradually shortened, by which means the wing becomes short and rounded, and the first feather somewhat shorter than the second (e. g. *Garrulus, Regulus, Timaliæ, Myiothera*) ; these birds usually fly badly, are seen much upon the ground, and do not fly far. In others the feathers of the first finger-joints (nos. 2–4) are moderately long and exceed the others; but when this occurs among the Song-birds it is usual for the first feather to be so reduced in size that it either remains as a small rudiment or entirely disappears; and in this latter case there are only nine primaries (as in fig. 8). This reduction of the first feather is peculiar to the Song-birds, but among them it is quite usual. We may, indeed, estimate that one fourth of the known species are destitute of the first quill-feather, one fourth have it rudimentary, one fourth have short rounded wings with ten primaries, and the remaining fourth have tolerably long wings, but with the first feather shorter than those that follow (e. g. *Corvus*, exotic *Muscicapæ*, &c.). It would appear therefore as if in the Song-birds there was a compensation between the development of the feathers of the first and second joints of the finger, so that the increase of the latter brought with it a diminution of the first feather.

The first feather is deficient especially in many American species; namely, the American *Sylviæ* and their allies, in the *Tanagræ, Euphone, Hirundo,* and all American Sturninæ and Passeres. In the Old Continent it is deficient in *Anthus, Motacilla, Hirundo,* and in about one half of the Passeres.

A rudimentary first wing-feather occurs in America almost solely in the *Turdi*; but in the Old World in the *Turdi* and *Sylviæ* and many of their allies, in the *Lanii* (pars), Graculinæ, Cinnyrinæ, Alaudæ, and the Ploceini among the Passeres.

The decrease in size of the outer quill-feathers, or their disappearance, is generally shown more in the fully developed dress and in the males than in the winter garb or in the females and young. Here belong the so-called subulate, or ensiform, or deeply notched, also, in general, sharp-pointed feathers which only occur among the first of them (nos. 1–3 or 4). In these the vane seems to be obstructed in its growth; but in the females and young such feathers are always broader and less pointed than in the males.

The longest remiges primores occur in some strong-flying genera, which have already been cited, namely, *Sterna, Larus, Glareola, Pterocles, Falco, Cypselus, Trochilus, Caprimulgus,* and *Hirundo,* in which, in general, the folded wing is twice as long as the trunk from the breast to the insertion of the tail.

It may be mentioned in this connexion that those birds have moderately long hand-feathers in which the folded wing extends $\frac{1}{5}$–$\frac{1}{4}$ behind the root of the tail, e. g. *Turdus.*

Rudimentary quill-feathers in the whole wing occur only in two known forms:—*Aptenodytes* (and *Alca impennis*) among the Swimming-birds, and the Struthious birds (with *Apteryx* and ? *Didus*) among the Wading forms; but in none of the higher orders of birds.

2. *Remiges cubitales,* or Pennæ cubitales (arm-feathers)*, are inserted in the fold of skin along the posterior side of the ulna, so that the root-ends always rest against the outer side of that bone. In form they always differ a little from the quill-feathers of the hand, being blunted and more curved, and especially not so thick and stiff, so that they approach more to the form of the ordinary body-feathers; their shorter quill-tubes also are much less firmly fixed, for which reason they possess a somewhat higher degree of mobility. Most of them are nearly of the same size and structure, so that when the wing is folded the inner ones usually extend gradually beyond the outer; but a few of the innermost 2–5 (fig. 3, nos. 14–17, and fig. 8, nos. 8, 9) are always gradually

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* They are also called *r. secundariæ,* or *minores,* or *secundi ordinis* (wing-feathers of the second order; "segelpennor," Markl.); but these names seem to me far less correct than the one above employed, which indicates their position on the cubitus. The denominations *primariæ* and *secundariæ,* or *primi* and *secundi ordinis,* would be much more suitable to designate the different series of wing-feathers.

much diminished in size, and have frequently a different colour and structure from the rest. They are, in this case, softer, more pointed, &c., and both in form and colour resemble the feathers of the back. These have been called *tertiary* wing-feathers, which, however, can hardly be considered right, for they are usually seated upon the cubitus, like the other cubital quill-feathers, from which in a great many birds they can only be distinguished by their diminished size, and they always show a clear transition to them in form and position. Nevertheless the series is continued beyond the joint, so that some of the last are seated upon the humerus in most Raptorial birds, Gallinæ, and Water-birds. They must simply be called *innermost* (internæ) or *divergent* (difformes), because they differ in form and colour from the rest. The latter is, indeed, always the case to some extent with a couple of the innermost quill-feathers; but a considerable difference is observed only in some few genera of diverse orders (*e. g.* in some *Anates*), strikingly in all the Tringaceæ and Charadriaceæ and in *Grus*, less signally in some of the *Rallinæ, Fringilla,* and *Emberiza,* Linn.; in a still less degree in the *Sylviæ* and many of their allies (but scarcely perceptibly in the *Turdi*), and especially in *Motacilla, Anthus,* and *Alauda,* which in this respect, and by many other resemblances, show great analogy with the Tringaceæ.

In number the cubital quill-feathers vary very considerably, namely between 6 (in *Trochilus*) and 36–40 (in *Diomedea exulans*). I append a table [Appendix II.] for the more accurate elucidation of these conditions, showing that the number is in general greatest in Water-birds, some of the Waders (*Ardeæ, Ciconiæ*) and Raptorial birds (Vulturinæ); that the average number in the other Raptorial birds, Gallinæ, and Waders is 15–16, which also occurs in many Water-birds; that most of the Coccyges have 10–13, but that in these, as in all the fore-named orders, the number varies, even in species of the same genus. Only the Song-birds have a nearly constant number—nine, which is the smallest number of general occurrence. Only *Trochilus* and *Cypselus* (among the Coccyges) have still fewer.

The number of cubital feathers depends upon the length of the cubitus upon which they are inserted; and the length of the cubitus, again, is in proportion to the length of the humerus; we must therefore take these parts into consideration. From what has been said, it is clear that all birds which have many cubital feathers also have long wing-bones and, consequently, long wings. We have just spoken of the wings which are long in consequence of the length of the hand-feathers; these have generally shorter wing-bones.

The length of the wing-bones can only be determined by comparison with the *trunk*; and this must be calculated from the shoulder to the last caudal vertebra (the base or insertion of the tail), to which the rectrices are attached. The shoulder is distinguished by the usually projecting end (or process) of the *os coracoideum* which receives the clavicle (*furcula*), and which may be distinctly recognized under the skin, immediately in front of the humerus. The articulation of the humerus is situated immediately behind this tubercle, in the anterior part of the trunk itself. The first principle of determination is, therefore, to measure how far the posterior wing-fold (the elbow, or the posterior ends of the humerus and cubitus) extends upon the trunk when the wing is folded up. Of all birds, *Diomedea exulans*, which has the greatest number of cubital feathers, has also the longest wing-bones; these reach considerably (by $\frac{1}{13}$ or 32 millim.) beyond the posterior extremity of the trunk. They are shortest in *Trochilus* and *Cypselus*, in which they do not reach quite one fourth of the trunk. In general they are longest in Water-birds, Waders, and Raptorial birds. Thus they reach in *Diomedea* (all species) more or less beyond the base of the tail; in *Pelecanus* and *Fregata* nearly to the extremity of the body ($\frac{7}{8}$?); in *Carbo* rather more than $\frac{1}{2}$ (in *Dysporus* much further).

Among the Gaviæ they reach in *Larus* to about $\frac{4}{5}$; in *Sterna* to $\pm\frac{2}{3}$; in the Procellariæ they vary from $\frac{1}{2}$ (in *Thalassidroma*) to $\frac{2}{3}$.

In *Cygnus* and *Anser* they reach $\frac{3}{5}$; but in the Ducks (*Anas, Fuligula, Mergus*) only a little more than $\frac{1}{2}$.

So also in the Pygopodes, namely, to $\frac{3}{5}$ in *Colymbus* and *Podiceps*, but little more than $\frac{1}{2}$ in *Alca, Uria*, &c.

Among the Waders the wing-bones are longest in the larger *Ardeæ*, in which they are but little shorter than the trunk ($\frac{7}{8}$ or more); in the Ciconiaceæ they reach about $\frac{4}{5}$. (They appear to be longer in *Phœnicopterus*).

In *Grus* and *Otis* they reach to $\frac{2}{3}$; in the Tringaceæ and Charadrinæ to rather more than $\frac{1}{2}$; and in the Rallinæ, with *Fulica*, not quite to $\frac{1}{2}$.

In the Gallinæ the wing-bones usually do not quite reach half the length of the body (in *Lagopus* $\frac{2}{5}$).

The Raptorial birds, again, have them longer, and it is remarkable that those which live upon carrion and fish and about water stand foremost in this respect.

In the Vulturinæ the wing-bones appear generally to reach nearly to the extremity of the trunk; in *Pandion* to $\frac{5}{6}$; in *Aquila albicilla* to $\frac{4}{5}$; in *Aquila chrysaëtos* nearly to $\frac{3}{4}$; in *Buteo* to $\frac{2}{3}$; somewhat shorter in *Astur* &c. In the true Falcons they are scarcely over $\frac{1}{2}$.

The Owls are distinguished by their long extremities and larger head contrasted with the small body. The wing-bones most commonly reach to about $\frac{3}{4}$ (*Bubo, Aluco liturata*, &c.); but to $\frac{4}{5}$ in *Strix otus*, and only to $\frac{2}{3}$ in *Strix nisoria*, and $\frac{1}{2}$ in *S. passerina* (Day-Owls).

The Coccyges appear to include no form with long wing-bones. Most commonly they reach to about half the length of the body, somewhat more or less (*Columba, Cuculi, Psittaci, Alcedo*, &c.); they are rather longer in *Coracias* and *Caprimulgus*; *Picus* and *Upupa*, which agree so much with the Song-birds, have them rather shorter; *Trochilus* and *Cypselus* have already been mentioned on account of their extremely short wing-bones.

In all the forms hitherto enumerated, the length varies somewhat on either side of the mean numbers here given, even in species of the same natural genus, just like the number of quill-feathers; but this variation almost ceases among the Song-birds, in which the wing-bones generally extend half the length of the body, or are a little shorter (*e. g.* in

Parus and Passeres). They seem to be longest in *Corvus*, in which they reach a little over the half of the body, and shortest in *Hirundo* and *Certhia* (and probably in many of the short-winged tropical forms), in which they only reach one third. It must be remarked that precisely those which have the shortest wing-bones are the best and the worst fliers of the whole order.

Two special osteological conditions cause some alterations in the above-cited measurements, although these are rarely of much importance. It must be remarked, however, in the first place, that these, as well as all forms in the skeletal structure of birds, are subject to many exceptions, and by no means indicate the affinities of the species with the same certainty as the external feathery covering. This is therefore noticed rather to give a distinct idea of the constitution and measurements of these parts than to furnish definite characters.

The first relates to the constitution of the shoulder itself. In the Song-birds the *os coracoideum* is, in general, slender, and projects as a short, somewhat inwardly-directed process in front of the articular surface of the humerus. The humerus is attached at the very front of the trunk, and projects nearly as far forward as the true scapular tubercle (of the *os coracoideum*). This bone (humerus) is therefore here but little shorter than the measurement just given, or nearly half the length of the body. In the Water-birds, Waders, Raptorial birds, Gallinæ, and in the greater number of the Coccyges, on the contrary, the *os coracoideum* is generally thicker, and projects as a very large shoulder-tubercle, like a somewhat longer piece of the same bone, right in front of the articular surface of the humerus. The humerus, therefore, is attached somewhat further behind the shoulder-tubercle, and consequently loses something more of the stated length. Besides this, the great upper edge of the humerus for the attachment of the muscles of the shoulder (representing the *tuberc. majus humeri*) projects, in the Song-birds, directly outwards horizontally from the articular surface, by which means the humerus stands out strongly transversely at its base, in the form of a tubercle, which, in living or recently shot birds, often seems to conceal the scapular tubercle. Hence if we take the measurement from it we get only the actual length of the *os humeri*, but not the length from the scapular tubercle. The Coccyges show many considerable differences in this respect, and partly approach the Song-birds, and partly the Gallinæ and Raptores. In the other orders named the same edge is often directed upwards or pressed backwards, as in *Columba*. This, therefore, causes the base of the humerus not to stand out so broadly and not to conceal the true scapular tubercle in fresh birds; but the latter is always perceptible from without, immediately in front of the shoulder-joint.

The length of the cubitus must also be particularly mentioned. The birds which feed their young and possess available posterior toes (*Aves altrices*: "Nesthocker," Oken; Oscines, Coccyges, Accipitres) have the cubitus longer than the humerus, so that its anterior extremity (with the carpus) stands even with, or somewhat in front of, the shoulder and the breast. In the other birds, however, which have a raised pollex &c. (*Aves præcoces*: "Nestflüchter," Oken; Gallinæ, Grallæ, Anseres), it is in general shorter, even shorter than the humerus itself. This condition, however, is modified in this way: that in all birds which fly strongly, and especially in all which have long hand-feathers, the cubitus is longer, in order to furnish space for the thicker or more numerous *pennæ cubitales*, and through this the carpus projects further in front of the breast. The contrary occurs in the bad fliers.

We see, therefore, in the lowest Water-birds, the Pygopodes, as also in *Mergus*, that the cubitus is much shorter than the humerus, and nearly equally so in the *Fuligulæ*; it is somewhat shorter than the humerus in *Anas* and in *Cygnus gibbus*, equal to it in *Cygnus musicus* and *Anser cinereus*; and somewhat projecting in the smaller species of the genus *Anser*, although the carpus still stands behind the shoulder-tubercle. The same in *Carbo, Procellaria, Diomedea*. But in *Sterna* and *Larus* the carpus always stands somewhat in front of the shoulder-tubercle.

The Waders are in general good fliers, and in most of them the carpus stands on a level with the shoulder; but in *Ardea, Ciconia, Grus,* and many which have the longest wings, it stands further forward. In the Rallidæ, on the contrary, the cubitus is shorter than the humerus.

In the Gallinæ the latter condition usually occurs.

In all Raptorial birds the cubitus extends in front of the shoulder, in some nearly one fifth of its own length (e. g. *Pandion*).

The Coccyges vary in this as in many points; but most commonly the carpus projects a little before the shoulder (*Columba, Psittacus,* and many others; further forward in *Coracias*; not forward in *Picus*).

In the Oscines this latter condition is by far the most general. I know only a single genus—*Cinclus*—which has so short a cubitus that the carpus does not project before the shoulder. This projection becomes somewhat more considerable in those which fly strongly. *Hirundo,* like *Cypselus,* seems to have received compensation in the cubitus for the shortness of the humerus; for the former is about twice as long as the latter, so that the carpus projects forward about one sixth of the whole length of the body in front of the shoulder.

After this digression from the treatment of the arm-feathers of the wing, we must return to them in order to speak of their size, a point of much importance from a systematic point of view, but hitherto quite neglected. The length of these feathers, as in the case of the wing-bones, can only be measured by comparison with the body itself, namely, by their backward extension when the wing is closed. But as those which are seated upon the posterior part of the cubitus must necessarily project beyond the latter unless they are much shorter than those in front of them, they give no certain measurement, but this must always be taken only from the very foremost feathers, placed nearest to the hand. In most birds the quill-feathers diminish a little, more or less, posteriorly in absolute length, and it is a rare exception for some of the hinder ones to have a greater absolute length than the anterior (*e.g.* in the Alaudinæ, Tringariæ). It belongs to systematic ornithology to ascertain this. If we wish to have an exact determination of their length, the unequal forward extension of the cubitus just mentioned must be taken into consideration. The best mode of comparison is to state the length of the body, and the distance from the carpus to the tip of the first arm-feather.

The cubital feathers are shortest in the Water-birds and Waders, especially in those which have the first wing-feather the longest. Leaving out of consideration *Aptenodytes* and *Alca impennis,* in which all the quill-feathers are rudimentary, the foremost arm-feathers extend only half the length of the trunk in the Pygopodes generally, although the cubitus terminates anteriorly behind the shoulder. In *Diomedea* they do not reach to $\frac{1}{2}$; in the Anates (with *Anser* and *Cygnus*) to about $\frac{2}{3}$; in *Carbo* to $\frac{4}{5}$; in *Procellaria glacialis* about to $\frac{2}{3}$. In *Sterna,* on the other hand, they reach nearly to the end of the body, and in *Larus* a little beyond it.

In the Waders it is a usual character for the anterior arm-feathers to reach to about $\frac{2}{3}$–$\frac{3}{4}$ of the body, as in the Tringariæ, Charadrinæ, and Rallinæ. But in the large-winged forms, *Vanellus, Ciconia, Grus,* they reach about to the root of the tail, and in *Ardea* somewhat beyond it.

The Gallinæ show the peculiarity that the first feather is very short, only $\frac{2}{3}$–$\frac{3}{4}$ of the following one. The latter reaches to $\frac{2}{3}$–$\frac{3}{4}$ of the trunk, and this applies also to the male of *Pavo,* which has the last arm-feathers so remarkably elongated. (Of *Argus* I have no sufficiently perfect specimen to examine.)

In all Raptorial birds the first arm-feather extends considerably beyond the root of the tail, except in *Falco,* in which it about reaches to that point. The arm-feathers are longest in the Owls, in which the anterior ones reach nearly twice the length of the body (e. g. *Strix lapponica* $1\frac{7}{8}$, *S. liturata* $1\frac{2}{3}$, *S. otus* $1\frac{3}{5}$, *Bubo* $1\frac{3}{7}$). In Eagles and Vultures they are usually about $1\frac{1}{2}$.

In the Coccyges the first arm-feather is often about even with the insertion of the tail (*Columba, Coracias, Caprimulgus,* most Psittaci, *Picus viridis, Iynx*), rarely a little shorter (*Alcedo, Platycercus,* and some other Australian Psittaci), but often $\frac{1}{4}$ longer (*Cuculus,* Pici varii et nigri); they are much shorter ($\frac{3}{4}$) only in *Trochilus* and *Cypselus,* which, in all respects, have these feathers so peculiarly formed.

In the Oscines, as usual, we meet with less variation. In a single form, *Cinclus,* only have I found the anterior arm-feathers not reaching to the root of the tail; they attain only $\frac{3}{4}$ of the trunk. In *Hirundo* and *Sturnus* they extend just to the end of the body, in *Turdus* and *Fringilla* usually a little (about $\frac{1}{6}$ or less) beyond it, in most about $\frac{1}{4}$, and in some (e. g. *Corvi, Garruli, Pari*) still further (about $\frac{1}{3}$) beyond the end of the body. It would seem as if, in *Paradisea apoda,* they reach nearly $\frac{1}{2}$ beyond the body (*i. e.* to nearly twice the length of the body), but I have only seen stuffed specimens of this genus.

It appears from what has been stated above that the length of these feathers, and consequently the breadth of the wing, varies in a great degree according to the generic form to which they belong, but they also vary a little between nearly allied species. A very slight difference in their length, such as can only be expressed by a small number which might be believed to be of no consequence (*e. g.* $\frac{1}{10}$ of the length, 3–5 millim. in a bird the size of a Sparrow), nevertheless produces a considerable increase or diminution in the whole surface of the parachute formed by all the cubital feathers together, which is not only easily recognized by the eye, but may also have an influence upon the power of flight. But leaving out of consideration the variation in the species, it would seem that these feathers are in general longest in the Song-birds, that they gradually diminish throughout the other Orders, and are smallest in the Water-birds. It ought also to be remarked that the length of the cubital feathers is much less subject to variation in young birds than the hand-feathers, which grow forth later.

We have seen that many weak-flying birds have long arm-feathers, and consequently broad wings (e. g. *Parus, Sylvia,* &c.), that others have them short, and that the same difference occurs in the strong fliers. Thus they show themselves to be the least important part of the organ of flight, but they certainly serve more than the primores to modify the flight. It seems clear, for example, that the birds that fly best, sweeping along with motionless wings, or, as it were, sailing forward through the air, usually in large circles and at an immense height, only possess this power through the great surface which is formed by *long* and numerous arm-feathers, e. g. *Vultur, Aquila, Milvus, Ciconia, Grus.* This kind of flight is the most beautiful of all, and ought to be regarded as the most highly developed; for, in the first place, these birds can continue longest in flight, and, in the second, they can always, when necessary, fly just as quickly as the best of other birds, plunge down with the rapidity of an arrow from the most considerable heights, &c. Shorter feathers, and consequently somewhat narrower wings, appear, on the other hand, generally to belong to birds which fly rapidly straight forwards. If these wings are in addition strongly constructed, and long in consequence of the length of the hand-feathers, they give the bird the power of flying strongly, with the faculty of flinging itself about, and turning rapidly within a small space, e. g. *Falco, Hirundo, Cypselus, Columba, Cuculus.* This mode of flight is equally of advantage to the Birds of Prey, and to those which have to evade their enemies. The birds which possess short wings always fly with rapid movements of the wings, uninterruptedly when the wing is narrow (*e. g.* Pygopodes, *Anas,* Gallinæ), and jerkingly when it is broad (*e. g.* a great part of the Oscines, *Picus,* &c.).

We have still a few words to say upon the attachment of the arm-feathers. In all Song-birds they rest with the quill upon the whole breadth of the ulna (see fig. 1, *g*) to which they are firmly and closely attached. In the somewhat more strongly constructed forms the quills are in addition so thick that they leave but little space between them, and pass with their basal ends beyond the ulna a little forward towards the radius; but in all (*e. g.* even in *Parus*) they are still large enough nearly to displace the largest covert-feathers, which lie as if firmly grown to the tubes of the quill-feathers. The same thing is met with, more or less, in all birds which have broad wings, and consequently large arm-feathers; but if we compare the Song-birds with other birds which have these feathers equally large*, we shall always find that the former have the feathers resting with a larger part, in proportion to their size, upon the ulna, and consequently also more firmly attached to it, and the covert-feathers more strongly attached to the quills. In the Water-birds, and in general in those which have short quill-feathers, the latter are placed almost behind the wing-bone, and so loosely attached as to possess considerable mobility, and the covert-feathers are inserted separately from the quill-feathers as a distinct series, because the quills are thin and leave considerable interspaces. In this, as in so many other points, *Picus* approaches the Song-birds.

B. *The smaller Feathers of the Upper Surface of the Wing.*

These feathers are always most developed on the cubitus, where they are also most easily seen and examined; therefore we will start from that part. They have usually all been designated by the common name of coverts. They are of the following kinds:—

1. *Tectrices majores* (great wing-coverts, *Pteromata*, Ill.†, figs. 3, 7, *k*, *l*) form a single series which is always situated immediately within upon the roots of the quill-feathers. They always retain much resemblance in form, texture, and colour to their corresponding quill-feathers, and are always, like the latter, destitute of accessory plumules. They

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* E. g. *Corvus*, *Turdus*, *Hirundo*, and *Cinclus*, compared with *Strix* or *Aquila*, *Larus*, *Falco*, and *Anas*.

† The cause of my not setting this name in the first place is that it has never been generally accepted, and that we must not increase the number of terms except when it is clearly unavoidable or decidedly advantageous. The Swedish name "flygpenntäcken," adopted by Marklin in the translation of Illiger's 'Terminologie,' may be admissible as containing its own explanation.

should be named after their quill-feathers, so that those on the hand are called *Tectrices primores* or *manus* (great hand-coverts), and those on the forearm *cubitales* (great arm-coverts). The former are always inserted in the skin in the same tube with their corresponding quill-feathers, and so close upon the latter that the two seem to have grown together. The same condition occurs with those of the cubitus in all birds which have large cubital feathers, as already stated.

The greater hand-coverts (*T. majores primores*) are equal in number to the quill-feathers. The outer ones always diminish in length more than the quill-feathers, so that the first and second are shorter than the following ones, when, for example, only the first quill-feather is somewhat shortened. They are most frequently whole-coloured and dark, very seldom spotted.

Of the *tectrices cubitales* there are always one or two more than of the corresponding remiges; thus, externally, there is always one small supernumerary one (*l*, no. 1). Properly, they ought to be of equal number, as the feathers here, as everywhere, are arranged in quincunx (rows of three different sets), which constitutes a continuation of their arrangement on the hand. The supernumerary coverts seem to me therefore to show that a quill-feather, which ought to have been placed in the middle of the wing-fold, is not developed. These coverts appear in general to increase in length inwards, as the inner ones cover a greater portion of their corresponding remiges than the outer ones; but this is usually due to the fact that the remiges decrease inwardly somewhat in length, while the coverts do not diminish. In the Song-birds they are so short that they do not attain half the length of the remiges, except inwardly in some genera; but in all other orders they are larger, so that they always reach beyond the half of their corresponding remiges, even the outermost (see figs. 7 and 10, *l*, of Song-birds, and figs. 3 and 11, *l*, of another order). Only some Pici (varii) and *Upupa* constitute an exception to this, for in this respect they present the same conditions as the Song-birds.

This is due not only to the greater length of the remiges in the Song-birds, but really also to the greater length of the coverts in proportion to the body in the other orders, which distinctly shows that in the Raptorial birds, *Ardeæ, Ciconiæ,* and all other birds of which the cubital remiges are comparatively of the same length as those of the Song-birds, the coverts reach beyond their middle. *Cinclus,* which has shorter cubital remiges than other Song-birds, nevertheless retains the proportions of that order, and a direct comparison between nearly equally large, and in other respects similar, species shows it distinctly, e. g. *Hirundo, Turdus, Corvus,* compared with *Cypselus, Cuculus, Coracias* (see fig. 10, *Turdus,* fig. 11, *Cuculus*). In some Water-birds and small Waders the great cubital coverts are but little shorter than the remiges; in other respects they present many peculiarities, *e. g.* in *Gallus* !

If this difference in the size of the coverts be taken together with the difference which will be mentioned below (under § 3), it is the most easily recognizable and most general of all the external characters at present known by which the Song-birds are differentiated from the other orders.

2. *Tectrices secundæ seriei* (the coverts of the second row, *m, n*), which lie immediately upon the greater coverts, generally resemble the ordinary feathers of the body. Those which belong to the cubitus have usually the peculiarity of lying reversed with relation to the greater coverts and the remiges, so that the inner margin of each feather (that turned towards the humerus) is free and covers the outer margin of the next one. But I have always found them unreversed in *Trochilus, Coracias, Cuculus, Columba, Gallus, Lestris, Larus, Sterna,* and *Uria,* as well as in young Song-birds in their first dress*. They are inserted in the skin either immediately behind the muscular layer,

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* Mr. W. v. Wright has kindly communicated to me the observation made by him, that some of those which lie far back on the cubitus, together with the corresponding feathers of the next series (§ 3), resume the right position (like the remiges) in all Gallinæ and Water-birds (see fig. 3, *n, n*).

between the roots of the remiges and greater covert-feathers, or within the muscular layer, close upon its hinder limit. (The latter in the Oscines, e. g. *Parus.*) They are most visible in the Oscines, in consequence of the absence of the next series, and are quite short, soft, and usually distinguished by a peculiar colour-marking, *e. g.* white at the apex in many, so that they form a transverse band upon the wing. (A transverse band upon the wing is almost still more frequently produced by the apices of the greater covert-feathers, which, in the Song-birds, are often white, yellow, or of paler colour).

These feathers seem to have been but little observed. According to the definition in Illiger's 'Terminologie,' they constitute his "*ptila,*" which are said to lie immediately within the pteromata; but the want of any special name for all the following smaller feathers seems to show that Illiger included them also under the name of *ptila.* In the Song-birds, in which they alone are *reversed,* they may receive this name (*perversæ*); but it seems to me to be safest to employ the denomination above given, which at any rate is correct. If we had not accustomed ourselves to an entirely different signification of the names *primariæ* and *secundariæ,* these terms would undoubtedly have been best of all adapted for these two series, the first and second coverts.

3. The *Tectrices minores cubiti* vel *manus* (smaller wing-coverts, figs. 2, 3 *b*) form several (2–5) series inserted in the skin upon the bones and muscles of the arm or hand itself. In form they do not differ at all, or but slightly, from the feathers of the body, and in position they agree with the next preceding series, inasmuch as their margins cover each other in a contrary way to those of the remiges. But they lie similarly reversed also in those birds in which those of the second series are not reversed (*Coracias, Cuculus,* &c.).

In the Song-birds these feathers should properly form three series on the cubitus, but they show the remarkable peculiarity that they are never fully developed. Only in the young in their first plumage, and in the winter plumage, a few of them, but never all, occur in the form of down, or of very small undeveloped feather-rudiments, covered up by the next following perfect feathers. In older birds in the summer plumage scarcely a trace of them is usually visible.

This remarkable structure is so peculiar to those birds which have the inferior larynx furnished with five pairs of muscles, that I have been unable to find any other form except *Cypselus* which resembles them in this respect; but it occurs in the whole of them without a known exception, and consequently forms a certain external character for them*. In every Song-bird, even when sitting with folded wings, and in stuffed specimens, we recognize this deficiency at the first glance; it causes the wing to exhibit only a small number of coverts, and these to occupy an inconsiderable space in comparison with those in the wings of species belonging to other orders (see figs. 10, 11).

All other birds have these feathers developed. In *Picus* and *Upupa*, which of all those which have no song-muscles most resemble the type of the Song-birds and seem to constitute the real transition to them, the second and third series are fully developed, but the first is incomplete, so that it merely consists of a few feathers towards the carpus, and all are so short that they project but little over the next following ones, and therefore may easily be overlooked in dried specimens. Except these I know no form in which they are less distinct or perfect. Three series occur in the Psittaci, all Raptorial birds, most of the smaller Waders, and in *Anas*; four in *Coracias, Cuculus, Gallinula, Limosa, Lestris,* and *Fuligula*; five in *Columba, Tetrao, Numenius, Podiceps, Colymbus,* and *Larus,* as also in *Carbo,* which has them dark-bordered. A more special study of them will no doubt repay the trouble it causes, but I have omitted it; it can be undertaken only with freshly killed birds.

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* I have recently had the opportunity of examining a softened skin of *Menura lyra*, and convinced myself that this bird also agrees perfectly with the Song-birds in this respect; it ceases therefore to be a probable exception, just like the other two, *Picus* and *Upupa*, which I previously regarded as such. On the other hand, I afterwards found that *Cypselus* has these feathers exactly as in the Song-birds, which was previously accidentally overlooked, probably on account of the size of the covert-feathers which occur.

On the hand these feathers are continued in two or three series, which in no respect differ in structure from the second series of coverts, and exactly cover the small portion of the hand which is not clothed by the large coverts. They are usually concealed by the quill-feathers of the thumb, and always lie right, *i. e.* not reversed as on the cubitus.

4. The *Tectrices minimæ* s. *antecubitales* (smallest or foremost covert-feathers, figs. 3 and 7, *e*) are seated in several series upon the fold of skin in front of the cubitus. They are right-lying, not reversed like those on the cubitus itself. But we often find one of these series reversed, in agreement with the preceding ones, *e. g.* in the Gallinæ, in the diurnal and nocturnal Birds of Prey, and many others. The series of feathers which are counted parallel with the preceding run obliquely towards the anterior margin of the fold of skin (see figs. 2, 3, 6, and 7); but in some Waders, in *Larus*, and especially in the lower Water-birds (Pygopodes, Procellarinæ), the fold of skin is very narrow in front of the cubitus, and covered only by 2(–3) complete rows of small feathers. In certain Psittaci and some few other birds, the feathers which are placed nearest to the margin have peculiar luminous colours. This margin was called the *campterium* by Illiger. I am inclined to think that we should do better by calling it simply the *margo alæ cubitalis, carpi,* &c., according to circumstances.

C. *Lower Wing-feathers.*

1. *Tectrices aversæ* s. *inferiores primæ* (reversed feathers, figs. 4 and 8, *o*, *p*). These are situated closest to the roots of the remiges, behind the muscular layer of the wing. They have undoubtedly the most singular position of all the feathers on the bird's body, for although they belong to the underside of the wing, their position is the same as that of the remiges, so that when the wing is considered from the underside they show their reversed side (with a raised, grooved shaft, &c. *Vide antea*, p. 397, 2). The right side is turned in-

wards, towards the remiges. The inner branch, which in all other feathers is an accessory plume, seems therefore in these to have been fully developed, while the outer branch quite disappears, for it is entirely deficient, and has not even persisted in the form of an accessory plume. These feathers constitute two series (one of which, however, often disappears), which may be regarded as corresponding to the first and second series of covert-feathers (or possibly the quill-feathers and greater covert-feathers of the upper surface!). They often retain a rigidity and straightness and an external form which give them some resemblance to quill-feathers.

On the cubitus the feathers of the first of these two series are firmly attached, and just like the remiges, with the inner (posterior) margin free, covering the outer (anterior) margin of the next feather; but in the second series they are movable and, more than any other wing-feathers, can be suppressed; further, they lie with the margins in the opposite direction to the former, so that the outer edge of each feather is free and covers the inner edge of the next one. This is so constant that I have never found an exception to it; and when either of the two series is entirely deficient, we can recognize by the position of the margins which it is that remains. The two series are continued upon the hand, but here they are often interrupted or divergent. In those birds in which the cubital remiges are continued beyond the joint upon the humerus (Gallinæ, Raptorial birds, Waders, Water-birds), the second series of reversed feathers is continued in the same way, but not the first (see fig. 4, *o*, nos. *1* & *2*).

In all Song-birds the whole of the first series is so completely deficient that not a trace of it remains. The second series consists usually of small feathers with downy edges, which are concealed by the following ones; but in *Corvus*, *Garrulus*, *Troglodytes*, and *Cinclus* they are larger and firmer; in *Ampelis garrulus* and in some Passeres (e. g. *Pyrrhula*) they are concealed everywhere except upon the middle part of the hand, where they project beyond the following feathers.

In all the other orders, on the contrary, the first row appears always to occur; and if either of them is wanting or rudimentary, it is the second. *Picus* alone agrees with the Song-birds. *Cypselus* and *Trochilus* have the first series perfectly developed, but seem to want the second entirely. In *Psittacus ochrocephalus,* Wagl., which likewise has the first series large, the second also occurs, but quite rudimentary and concealed by the following feathers. The same condition appears to me to occur in *Coracias* and *Cuculus. Columba,* on the other hand, has the first series small, concealed by the second, but, upon the hand, first interrupted, then again continued and larger; the feathers of the second series are very large upon the cubitus, but soon cease upon the hand, upon which they seem to form a single row with the first.

In the Accipitres diurni and the Gallinæ (fig. 4, *o,* nos. *1, 2*) the first series is pretty large and the second quite small, and concealed by the following feathers, or quite rudimentary. In *Falco subbuteo* they seemed to me to be entirely wanting; and the first series was concealed by the third. The Owls, on the contrary, have both series large; but in *Strix nisoria* the first is concealed by the second and downy at the edges; in *Strix aluco* the first series is the largest.

Among the Grallæ, these series in the Rallidæ seem to resemble those of the Gallinæ and Raptores. In the Tringariæ (*Scolopax, Numenius*) the first is the largest and continued upon the hand; the second soon ceases upon the hand, and becomes so high posteriorly upon the cubitus as to conceal the last feathers of the first series. *Grus* and *Ciconia* have the first series unusually large, especially inwards; and the second of moderate size.

In the Water-birds (*Anas,* the Pygopodes, and *Sterna*) those of the first series are very large; they reach to about $\frac{3}{4}$ of the remiges, and are continued to the end of the wing; the second are smaller, and cease a little before the tip of the finger. In *Carbo* the second series is small and concealed. In *Larus* both are very large and nearly similar, so that the first series is evenly concealed by the second, except posteriorly, where it projects far out. In *Uria grylle* the first series is large, the second small and concealed, but quite right-lying, with the obverse side turned away from the surface of the wing. In all non-Song-birds which have the feathers of this series small, there seems to be a distinct tendency, under certain circumstances, to turn them *right.*

2. The *tectrices infrabrachiales* s. *plumæ infracubitales* &c. (inferior arm-feathers, figs. 4 and 8, *q*) are seated upon the lower surface of the arm itself, the hand, &c., and turn their reverse side towards the part upon which they are inserted, as feathers usually do. But the edges of those on the cubitus have a reversed position, so that, although belonging to the underside of the wing, they lie like the margins of the remiges. This is particularly remarkable, as such a reversed position as compared with the other feathers also occurs in those which clothe the outer surface of the cubitus.

These feathers appear to me to show several differences from the others in number, size, position, &c., of which the following few remarks are only to be regarded as examples. In order to define their position more accurately, we may, if necessary, distinguish between *radiales, ulnares,* and *postulnares,* according as they are placed upon one or other of the wing-bones or quite posteriorly, with the preceding, behind the great sinew of the cubitus (*fascia tendinea*; see further on), which last is the most usual of all, for the first series there situated occurs in all birds and is often alone. It is to be remarked that we are speaking here only of series which consist of true feathers, of which there are but few, usually only 1–3; but in most birds, except the Song-birds, there is an abundance of down.

The birds provided with a singing-apparatus have in general only a single series of inferior cubital feathers, which are inserted behind the *fascia ulnaris,* are long and soft, and cover the preceding feathers (fig. 8, *q*). In *Corvus,* however, there is also a small series close behind the first.

In *Picus* and *Cypselus* also the first series alone is developed, but not so long; the second series is rudimentary. *Columba* has a moderate-sized and a small series upon the ulnar surface; then down; and then two small, nearly rudimentary, radial series. In *Psittacus amazonicus* there are two tolerably large postulnar series; then three small series in front of the *fascia tendinea* of the arm. (In *Psittacus magnus,* Linn., the first of these is seated upon the fascia itself.)

The Raptorial birds have most frequently three series seated upon the underside: the first consists of large, and the last of very small or quite rudimentary feathers. In *Strix liturata* and *Falco subbuteo,* however, I found only one large, and one nearly rudimentary series.

Among the Gallinæ the species of *Tetrao* have three definitely developed ulnar series (fig. 4, *q*, 1, 2, 3), and two or three nearly downy, small radial series.

Fulica has only the three rows on the ulnar surface formed as in *Tetrao*; *Ciconia nigra* scarcely more than two. *Numenius* and *Scolopax* have on the ulnar surface one moderate and one very small series; and on the radial surface one small and one rudimentary series.

In the *Fuligulæ* (*spectabilis, glacialis*) there are three series behind the fascia, namely one of middle size close upon the reversed feathers, and after this two series of very small feathers, which are placed alternately, but so close together that they seem almost like a single one; and, finally, three distinct radial series in front of the fascia. *Sterna hirundo* has only the three first-mentioned. *Podiceps* possesses only one series behind and one before the fascia; *Uria grylle,* on the contrary, has a pretty large one behind and three small ones in front of the fascia.

On the lower surface of the hand itself there are from three to four irregular series of short, rounded, and adpressed feathers, which closely cover this part, as on the outer surface (figs. 4 and 8, *r*).

3. The *tectrices antecubitales inferiores* or *inframarginales,* the lower marginal feathers of the wing (*s*), clothe the underside of the great fold of skin between the humerus and cubitus. In general they only form two or three series, situated beneath the margin itself, so that the greater part of the fold of skin is destitute of feathers, or has nothing but down. In all birds they are in all respects right-lying or opposite to the remiges. Thus they show the right side, and

cover the next feather with the outer margin. In front of the humerus they sometimes take on another form.

In the Song-birds there are only two series immediately beneath the margin of the skin, and these are continued without any alteration as far as the base of the humerus. They are unusually soft, with separate hair-like rays, so that they do not present a definite outline (contour). Those in the outer series are small; but those of the inner one are very long and curved, and cover the whole under surface of the arm. In *Corvus* and *Cinclus*, however, they are flat and have a more definite form.

Among the Coccyges, *Picus major* and *P. martius* have these feathers nearly as in the Song-birds, but not so long, and of a more definite form ; *Picus viridis*, like the Psittaci, has three series, none of which has very long feathers. *Columba* proves to be distinctly divergent ; the fold of skin is clothed with three more widely separated series, of which only one occupies the margin, the second the middle, and the third the inner part of the fold, without any downy series. These feathers are rather short, rounded, and not curved.

Strix has two series, of which the inner one consists of feathers of moderate length, soft, and but little curved ; near the body they are larger. In *Aquila, Buteo, Pernis, Astur,* and *Falco* there are from four to six series below the margin, which occupy a considerable portion of the breadth of the fold, but nevertheless leave room for downy series close to the cubitus. The innermost are of moderate length, the others short ; all are firm, of definite form, and but little curved.

In *Tetrao* these feathers perfectly resemble those of the diurnal Birds of Prey.

Fulica has three series, of which the inner are long and exceedingly soft. In *Numenius, Scolopax,* and *Ciconia* there are also three series, but tolerably firm and of definite form —the inner of moderate size, the two outer very small.

In *Anas,* Linn., there are only two series of short, ovate, scarcely curved feathers, immediately under the margin; towards the body they become longer; so also in *Podiceps, Colymbus, Alca,* and *Uria.* In *Lestris* a third very small series is added on the margin. *Larus* has a moderate uniform series and a small one.

D. *The Rest of the Wing-feathers,*

on the pollex and humerus (and the wing-spur).

1. *Plumæ pollicis, alula* s. *ala spuria* (thumb-feathers, *d*), seated upon the pollex. These are usually from two to four rather large feathers, which have the aspect and firmness of true quill-feathers, and reach somewhat beyond the end of the small covert-feathers of the hand. Properly, there would seem to be always four of them, but the two lower ones, or only one, are often soft and exactly resemble the small covert-feathers of the hand.

In the Song-birds we can generally count only two thumb-feathers, or three when one of the coverts acquires a somewhat more definite form. So also in *Picus.* They are more definitely three in the other Coccyges, Tringaceæ, and *Anser*; and four in the diurnal Raptores, the Gallinæ, the other Waders, and the Water-birds, in which all the feathers of the thumb acquire the quill form.

In the Song-birds the thumb is free for half its length or nearly to its base; but in the Water-birds (*Anas,* the Pygopodes, *Larus,* and *Carbo*) it is loosely attached to the hand by skin up to the tip, and in *Aptenodytes* no trace of it is visible externally. Among the Waders it is completely united in *Ciconia,* but has the tip free in the Tringariæ. The Gallinæ, Raptores, and Psittaci have it nearly half-free. In *Cypselus* it seemed to be completely united.

Upon the names of *alula* and *ala spuria* it is to be remarked that I can see no particular advantage in employing them in preference to the much more natural one, *plumæ pollicis*; and, further, that they have been very much misapplied both in older and newer descriptions of birds—*e.g.* in Wagler's writings, in which they most frequently indicate the great covert-feathers of the hand.

At the tip of the thumb there is a small *claw* or *nail* in many forms of birds, possibly in all except the Song-birds, Pici, and Owls. It is very long, strong, and hooked in *Struthio* ; long, straight, and pointed in *Ciconia* and *Sterna* cylindrical, blunt, and but little curved in *Cypselus* ; similar, but small, in *Falco palumbarius* ; very small, flat, nearly of the form of the human nails, in *Columba,* the Gallinæ, Anates, &c. In *Struthio* (*S. camelus* and *casuarius*) there is also a claw at the apex of the large finger of the wing.

2. *Pennæ humerales* (quill-feathers of the humerus, figs. 2, 3, 6, & 7, *t*).—We may so name, although not quite properly, from three to six small, nearly always concealed feathers which spring from the upper surface of the humerus close to its apex. They are distinguished, when they are developed, by some resemblance in form to the *remiges cubitales,* and have most frequently a different colour from the dorsal and covert-feathers ; but if we trace out the series which they form, they are found to constitute a continuation of the *tectrices minores cubitales.* The middle one or more are always the largest.

In the Song-birds they are very small, soft, and downy at the margins, and therefore difficult to distinguish. However, they may be distinctly recognized in *Fringilla* and *Pyrrhula.*

Picus has 3, very small but distinct; *Psittacus* has 4, and *Coracias* 5, well developed ; but in *Columba* and *Cypselus* they can hardly be distinguished. In the Accipitres there are always three or four distinct ones, but very small, and differing considerably in form. So also in the Gallinæ.

In *Scolopax, Numenius, Totanus,* and many of the smaller Waders, I have counted 5 very distinctly : so also in *Fuligula* ; 6 in *Cygnus, Lestris,* and *Colymbus,* and 8 in *Podiceps rubricollis. Larus* has two pretty long ones and some very small.

This series of feathers is followed, in front, by one or more series which can only be called *tectrices humerales.* They have quite the aspect of covert- or dorsal feathers.

Nitzsch names these feathers the *parapterum,* which name is, however, employed by Illiger in common for these and the *infrahumerales* and *scapulares.* It seems to me that this term may and must justly be dropped.

3. *Plumæ infrahumerales* (the inferior feathers of the humerus) on the underside, opposite to the preceding.—Some of them, situated on the anterior surface of the humerus (fig. 5, *u*, fig. 4, *n*), are very strongly developed in the Water-birds and Waders, most frequently very long, slender, straight, and somewhat obtuse. The middlemost are always longest. There are from 7 to 9 of them. It is quite the same in the Gallinæ and diurnal Birds of Prey, but the number is only 7 or 6. In the Owls they are small and less distinct. *Columba* has 5 flat and tolerably large ones. In *Coracias* they are very large; in *Cuculus* distinct, but not large. Most of the Psittaci have them very small and indistinct, but *Psittacus amazonicus* has 2 very long ones.

In *Picus* and in all the Oscines this series of feathers, which in all those previously mentioned are large, is wanting, and in them there is merely a row of small feathers upon the posterior side of the arm (fig. 9, *u*), and these also occur in the preceding below the humerus.

These series of feathers seem to form continuations of the *tectrices infracubitales.* Of all birds the Tringariæ (*Numenius* &c.) have them most developed; in these the series is continued by 3–6 feathers, which seem to be seated upon the hypochondrium itself.

The name *hypopterum* adopted by Nitzsch is, in my opinion, for reasons already given, to be mentioned here only as a superfluous synonym.

4. In immediate sequence to the two kinds of feathers last discussed, another sort must be mentioned in a few words, as, although they do not belong to the wing, they stand in close connexion with it, namely :—

The *plumæ scapulares* (shoulder-feathers, figs. 2, 3, 6, 7, *h*), which form a usually multiple series upon the body across the upper extremity of the humerus, therefore immediately above the scapula and parallel to it. They constitute Nitzsch's *pteryla scapularis* (figs. 2, 6, *h*). No doubt the name *parapteron* was originally formed for these feathers;

subsequently they have been called *pallium* &c. They are very different in number and size, for which reason they often furnish good generic and family characters. As an example we need only cite the division of the genera of Alcedines, which I have already made in the Vet.-Acad. Handl. 1835. Those which live on the Old Continent (*Halcyon, Alcedo,* &c.) have such large scapular feathers that they quite cover the usually shining blue hinder part of the back. The genus *Ceryle,* Boie, which includes the American species, and *Alcedo rudis* on the Old Continent, is chiefly distinguished by its short scapular feathers, which, as in the Song-birds in general, do not seem to be differentiated from the dorsal feathers, although they form, apparently always, a series widely separated from the latter.

THIRD CHAPTER.

On the Muscles and Dermal Surface of the Arm.

If the feathers be removed from the cubitus of a Song-bird, we find on its under surface a very deep and narrow pit of half the length of the cubitus (which we may call the *sinus cutaneus postulnaris,* fig. 9, *b q*), produced by the skin being folded in between the ulna (*b*) and the sinew of the *musc. flexor carpi radialis* (*q q*), which latter lies transversely upon the underside of all the remiges of the arm, and also externally in front of the true arm. Near this we see another, shallower, but generally somewhat broader pit (*bs*), between the ulna and the radius, and in both are situated some down or rudimentary feathers. These pits are deficient in all Water-birds and Waders, in which the arm at this point is flat and even. In many forms of these two orders (e. g. *Carbo, Sterna, Ciconia*) there is an inconsiderable impression in place of the pit between the radius and ulna, but of the true sinus no trace occurs. The Gallinæ, diurnal Raptores, *Psittacus,* and *Columba* show the same characters. The nocturnal Raptores (e. g. *Strix liturata* and *S. lapponica*) have the pit between the radius and ulna very large and deep, but no sign of the sinus behind the ulna. In *Cypselus* there is only an inconsiderable shallow depression in the place of this latter, and that between the two wing-bones is broad but not deep. In *Picus* the two pits are formed as in the Song-birds, but somewhat shorter. *Hirundo* has them both longest and deepest of all birds known to me.

As this difference in the exterior is manifestly founded upon a different arrangement of the parts situated under the skin, it seemed natural to make a new investigation of the muscles; and although this has not been successful in furnishing the grounds of an explanation of the differences in the wing-feathers of the Song-birds and the other orders, what has been ascertained may nevertheless be briefly recorded.

The muscles of the wing have already been described by several authors, but best, and with a comparison of all orders, by Schöpss in Meckel's 'Archiv,' 1829. This remarkable memoir ascribes to the whole wing forty-eight muscles, of which I propose to mention only a small part, namely, the muscles of the cubitus, and, supplementarily, those of the humerus. I pass over the muscles of the hand, as also those of the shoulder; and with regard to the latter I will merely remind the reader of the corrections recently made by Retzius (Skand. Naturf. Sällsk. Förhandl. 1842) upon the older descriptions of them.

Under the skin the whole of the forearm is, as usual, clothed with a thin aponeurosis (*fascia cubiti*), which gives off sheaths between the muscles, sinew-sheaths, &c. In birds it also forms a peculiar independent band (*fascia ulnaris*), which commences right upon the convexity of the *humeri condylus internus*, and finishes with one end upon the *os pisiforme*, and with the other in the *ligamentum carpi*. This band therefore lies along the ulna, but separated from it by a considerable space, which is occupied by the flexor muscles. Only in the lowest Water-birds (*Pygopodes*) it lies close upon the ulna, united to the bone like a direct continuation of the periosteum. It always passes straight forward, strongly strained between its points of attachment. This band plays a principal part in our exposition, and I must therefore commence with its description, for where it is strongly developed, flat, and broad, it fills the whole space between the sinews, which, in the Song-birds, is occupied by the above-mentioned *sinus cutaneus ulnaris,* in consequence of which this entirely disappears.

The muscles are as follows :—

A. On the outer (extensor) side of the cubitus, springing from the *humeri condylus externus* and the radius. They are in general extensors, and form together in Birds a large mass of flesh.

a. Long muscles (for the hand).

1. *Extensor carpi radialis longus* *, usually the largest on the forearm ; lies usually foremost on the radius ; springs from the humerus above the *condylus externus* ; the sinew terminates at the *tuber baseos metacarpi* quite in the margin of the wing, below the thumb. It is the principal extensor muscle of the hand and the largest remiges.

2. *Extensor carpi radialis brevis,* concealed between the radius and No. 4 ; springs from the posterior (ulnar) side of the radius ; is often very small, always much narrowed to a point, with a slender sinew, which comes from near the end of the radius, and is attached beneath the preceding muscle.

3. *Extensor digitorum communis,* from the *condylus externus* close upon the radius, visible externally beside No. 1. —Sinew long, runs to and along the front margin of the *os metacarpi* to the base of the first phalange, forming there a sort of trochlea ; thus it goes from the outer side across the fore margin of the bone to the inner side, where it is attached to the *turberculum marginis antici.* The sinew gives off a strong branch, like a filiform ligament, to the base of the thumb, as it passes by the latter. It extends

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* The names here given are those employed in human anatomy, in order to show the analogy more distinctly. As, however, the same part often performs different functions in different animals, the names derived from the functions are often unsuitable, *e. g.* No. 5, which in birds is not an extensor. So also with *supinator, pronator,* &c.

the finger and turns it a little so that the tips of the largest feathers are turned downwards; it likewise flexes the thumb. (The course of the sinew is analogous to that of the *Fl. dig. prof.* No. 11.)

4. *Extensor indicis proprius* (essentially an *extensor profundus,* answering to the *flexor profundus*), beneath the preceding, nearly between the radius and ulna, attached to the radius.—The sinew runs to the anterior margin of the metacarpus through the same sheath as the preceding, passes over the bend of the latter, and is attached at the base of the second phalange on the outer side, near the *flexor profundus.*

5. *Extensor carpi ulnaris,* visible externally near No. 3, is always firmly united with the ulna by cellular tissue, behind No. 6, and usually commences in common with the latter from the *condylus externus,* or on the surface of its basal sinew.—The sinew passes backward over the apex of the ulna, and attaches itself at the base of the *os metacarpi* on the outer side. (Called by Schöpss, "*abductor metacarpi.*")

b. Short muscles (attached to the radius or ulna).

6. *Humero-ulnaris externus,* commences in a point, with a short, strong sinew, upon the *condylus externus*; it is large, but quite covered by the preceding; it is broadly attached and generally spread out upon the anterior surface of the ulna (near the *ligamentum interosseum*). It seems to serve both as a flexor and to give firmness to the joint. (Called *flexor profundus antibrachii* by Schöpss; see further on under No. 15.) Leaving out of consideration some difference in position, it might be regarded as the same as the *anconæus parvus* in man. Except this, there is nothing with which it can be compared. I have, however, adopted a new name for it; for the reason of this see further on.

7. *Supinator radialis* is only *one* in birds, concealed under No. 1, in front of the radius; it springs from the *condylus externus,* united with No. 3, but beneath it; and is attached to the middle of the anterior surface of the radius without a

sinew. It seems reduced merely to act upon the capsule of the joint; supination is impossible. Its development seems to proceed *pari passu* with that of the *pronator superior* (No. 13); they generally terminate close together upon the radius.

B. On the inner (flexor) side of the cubitus, springing from the *humeri condylus internus* and the *ulna*. These are flexors in their nature.

The muscles of the forearm seen from this side form three great masses or groups, the sinews of which are separated by the above-mentioned pits when the latter are present. The anterior mass consists of the preceding Nos. 1 and 7, the posterior of Nos. 8–10, and 15, the middle one at the upper part of the *pronatores*, and then of Nos. 11 and 12.

a. Long muscles for the hand.

8. *Flexor carpi ulnaris*, from the *condylus internus* to the *os pisiforme*, below the *fascia ulnaris* or behind (beyond) it; first beside the ulna, then behind it, as if outside the arm. It is usually one of the largest cubital muscles, very fleshy with a strong sinew, the principal flexor muscle of the hand.

9. *Rector remigum cubiti*, constitutes as it were a part of the preceding, forming its hinder edge from the *condylus internus*; it gives off small sinews to all the remiges, and finally one to the *ligamentum carpi*. It therefore corresponds to the *palmaris longus* in man.

10. *Flexor digiti sublimis*, a long, slender, generally very small muscle, attached beneath the *fascia ulnaris* and quite concealed by it. It lies either on the surface of No. 8, or close to it on the radial side. The sinew is usually fine, passes round the radial side of the *os pisiforme*, obliquely over the metacarpus to the radial side of its apex, and attaches itself at the base of the first phalange, quite at the radial margin of its articulating surface; it seems therefore to act only as an extensor. (The sinew may be traced to the base of the second phalange in *Strix nisoria, Anas glacialis*, and, according to Schöpss, in *Psittacus, Fulica*, and *Aptenodytes*, but not in *Falco palumbarius*, &c.)

11. *Flexor digiti profundus,* attached to the ulna under No. 8 (*fl. carpi uln.*).—Sinew thick, passing under the *ligamentum carpi proprium* to the radial edge of the metacarpus, through the same sheath as the sinew of the preceding, but outside of it, continued along the inner side of the radial edge to the articulation of the second phalange, where it passes transversely across the margin of the bone inwards to the middle of the front margin of the articular surface. In *Cypselus, Falco,* &c. it is attached here; but in *Anas* it passes at this point into a longitudinal groove in the radial margin of the second phalange (which forms at the base a complete aperture), and is attached in the middle of the radial margin of the second phalange. The sinew passes by that of the *flexor sublimis,* but does not pierce it as in the Mammalia. It appears to flex the finger, and especially the second joint, in opposition to No. 3.

12. *Flexor carpi radialis* lies under the preceding, attached to the ulna, and not so high up as in man; passes obliquely forward to the *os carpi anticum,* under the sinews of the two *flexores digitorum* (10, 11), curves forward around the abovementioned bone in its groove, and attaches itself at the outer side of the *basis metacarpi.*—Flexes the hand and turns it outwards.

b. Short muscles (as on the outer side).

13. *Pronator superior,* from the upper anterior side of the *condylus internus* to the middle part of the radius; inserted upon the anterior part of the inside of the latter; usually very strong. Appears to act, in birds, like Nos. 6, 7, and the following one, partly as a flexor, partly to hold together and strengthen the joint, for pronation is impossible.—This and the next together represent the *pronator teres* in man. Schöpss calls this (No. 13) *brevis,* and the next (14) *longus,* which, when applied to most birds, is reversed or incorrect; the names must therefore be changed.

14. *Pronator inferior* (s. *profundus*), lies generally under the preceding, between the *condylus internus* and the radius,

on the *ligamentum interosseum*; but in *Picus* and *Pernis* it is also inserted upon the ulna.

15. *Humero-ulnaris internus,* from the *condylus internus* together with the *pronator inferior,* of which at first it seems merely to constitute a part; lies under the *flexor carpi ulnaris* (No. 8) nearly as No. 6 under No. 5, but not united with it. Inserted upon the ulna beside the *ligamentum interosseum.* It is large only in the Gallinæ, but occurs also in the Anates, *Uria,* the Psittaci, and probably in some others; but is certainly wanting in *Strix, Pernis, Charadrius, Sterna, Ciconia, Grus,* and the Oscines. Some membranous threads, very high up, usually, however, indicate its place. It must be regarded as a continuation of the *pronator inferior* on the other side of the bone. It is called by Schöpss "flexor profundus Gallinacearum," which long name, in order to be quite correct, must be further increased by the word "cubiti." Moreover it is erroneous, as the muscle occurs in several forms.

16. *Brachialis internus* (or *Flexor antibrachialis brevis*) is far less than in man, lies in birds almost entirely on the cubitus, and passes up, on the humerus, only between the two condyles; on the ulna it goes somewhat further down near the *ligamentum interosseum,* concealed by all the flexors and under the *pronator inferior.* It terminates on the ulna near the preceding (15) when this occurs, but is in its whole development without any relation to it, and seems scarcely to vary in size.

Note.—All the short muscles (*b*) on the outer and inner sides of the cubitus seem to form together one or two inferior muscular layers, which surround the joint, and are covered by the long muscles which pass to the carpus and fingers. They might all be called "*humero-ulnares,*" and seem all to have, as their original function, the holding together and flexion of the joint. They may therefore be merely developments of the capsular ligament. The near relation between the base of one pair of them and a pair of the long muscles (namely Nos. 6 & 5, Nos. 7 & 3, and Nos. 15 & 14) is to be noted.

The cubitus has no more than these 16 muscles. Of those which occur in man there are wanting therefore:—Among the *extensors,* three belonging to the thumb and one to the little finger; among the *flexors,* one to the thumb and the *pronator quadratus;* or all the proper long muscles of the thumb, and one which could not act. Other peculiarities of the class are:—The double pronator and the single supinator, the course of the sinews from the *flexores digitorum, fl. carpi radialis,* and *extensor digitorum,* the size of the *extensor carpi radialis longus* and *anconæus parvus* (? No. 6), and lastly the addition in some forms of No. 15 (*humero-ulnaris internus*). One could scarcely suppose that there would be so little difference between the muscles of the bird's wing and the human arm!

C. Muscles of the humerus, which still more resemble those of man. They are:—

17. *Extensor antibrachii* (or *triceps*), almost exactly as in man, but wanting the *caput internum.*

18. *Flexor antibrachii* (or *biceps*) as in man.

The *Anconæus parvus* has already been mentioned, No. 6; as also the *Brachialis internus,* No. 16.

Of the muscles of the shoulder we shall in what follows mention only the *deltoideus,* in order to avoid going into too many specialities here; but we will nevertheless remark that equally distinct differences, as in the forearm, present themselves, between different groups of birds, in the other muscles of the shoulder and those of the trunk.

In order to make a comparison between the muscles of the arm in the orders of birds, I have myself investigated them in 27 species selected from all orders, and can, moreover, avail myself of Schöpss's excellent descriptions of 11 (four of which, however, are the same); namely:—

Oscines: *Corvus corone,* Schöpss; *Garrulus glandarius,* Sch. et ipse; *Pyrrhula vulgaris, Emberiza citrinella, Parus cristatus,* and *Hirundo rustica.*

Coccyges (sensu latiori): *Cypselus apus, Picus major,* *P. martius,* and *Jynx; Psittacus magnus,* Gm., *P. amazonicus,* and *Columba livia,* Schöpss et ipse.

ACCIPITRES : *Strix nisoria, S. liturata, Astur palumbarius* (*Pernis apivorus*) ; *Aquila albicilla* and *Buteo vulgaris,* Schöpss.

GALLINÆ : *Gallus domesticus,* Sch. et ipse ; *Tetrao tetrix* and *Lagopus saliceti.*

GRALLÆ : *Struthio, Otis,* and *Fulica,* Schöpss ; *Scolopax rusticola, Grus, Charadrius pluvialis,* and *Ciconia nigra.*

NATATORES : *Anas glacialis, Sterna hirundo, Uria grylle,* and *Mormon arcticus* ; *Aptenodytes,* Schöpss.

All the species enumerated furnished with a song-apparatus (*Oscines*) agree so completely in the structure of the muscles, that I can scarcely separate any except *Hirundo.* They are distinguished from the other Orders especially as follows :—

a. The bellies of the muscles are plump and rounded, and short, so that the sinews of the larger ones occupy about half, or more, of the length of the cubitus.

b. The *fascia ulnaris* is very thin, not very visible from without, and wraps round the hinder group of flexors of the forearm like an imperfect sheath. The *flexor digiti sublimis* lies upon the *flexor carpi ulnaris* in the middle beneath the *fascia,* and commences near the humerus with a short, very slender, fleshy part.

c. The hinder bundle of flexor muscles here referred to lies much further out towards the remiges in front of the ulna than in other birds, which is due to the fact that the ulna is nearly straight, with only the superior $\frac{1}{6}$–$\frac{1}{8}$ bent upwards, and the other end still less curved in the opposite direction (therefore very slightly S-shaped). From these causes, cited under *a, b,* and *c,* a considerable space is left for the before-mentioned pits or depressions of the skin on the inner side of the cubitus.

d. The *humerus* is almost entirely clothed with muscles, which is due in part to their large size, in part and especially to the fact that the *deltoideus* goes down to the *condylus externus,* and attaches itself there near the *extensor* *radialis longus,* and thus clothes the whole outer side of the bone.

In other respects the muscles are disposed in the following manner (the conditions noticed in parentheses are certainly general in the Song-birds, but not characteristic of them):—

The *extensor carpi radialis longus* is the largest of all, only $\frac{3}{8}$ fleshy, undivided, with a strong flattened sinew; the *extensor brevis* is extremely small or rudimentary; the *extensor carpi ulnaris* has a long sinew, which commences at about $\frac{2}{3}$ the length of the ulna, and terminates upon a small tubercle on the ulnar edge at the base of the third (anchylosed) *os metacarpi.* (The *extensor digitorum communis* is of ordinary form. The *extensor indicis,* from the *basis radii,* without accessory muscles in the region of the carpus.) The posterior flexors have already been described. (The *flexor digitorum profundus* starts from the *basis ulnæ,* the sinew is strong and long; the *flexor carpi radialis* from $\frac{1}{4}$ of the ulna.) The *pronatores* coalesce nearly to a single muscle, which, however, consists of two very distinct bundles, reaching to half the length of the radius. *Supinator* small, to $\frac{1}{3}$ of the radius. (*Humero-ulnaris externus* to $\frac{1}{2}$ of the ulna.)

In *Hirundo rustica* the following deviations occurred:— The *flexor digitorum sublimis* was but little smaller than the *underlying* flexor carpi ulnaris, and commenced near it on the *condylus humeri*; but the *fascia tendinea,* as usual, quite membranous, thin, &c. The two *pronatores* of the same size. All the bellies of the muscles are still shorter than usual, namely that of the *extensor carpi radialis longus* merely to $\frac{2}{5}$ of the cubitus, by which means the outer pits of the cubitus become longer in proportion. In all other respects as in other Song-birds.

The birds of other Orders which were examined showed the following points of agreement by which they are distinguished from the Song-birds:—

a. The fleshy part of the muscles is of more even thickness and is elongated below towards the *ligamentum carpi,* often extending to the latter in the *extensor* and *flexor carpi ulnares.* Thus the sinews are short, and the arm itself acquires a uniformly thick and less elegant shape. (In those which have a very long cubitus, *Grus, Strix,* &c., the muscles are, however, only fleshy for $\frac{3}{4}$ or $\frac{2}{3}$ of their length.) Bony sinews occur in species of several Orders.

b. The *fascia ulnaris* is thick, strongly sinewy, flat and of uniform breadth, with definite edges which are not folded down, lying upon the surface of the muscular layer, and occupying the place of the *sinus ulnaris.* It starts from the ulna, along the whole of the bone, by a strong lamella, which separates the *flexor carpi ulnaris* from the *flexor digitorum sublimis.* The latter consequently lies on the inner (radial) side, and not in the middle upon the former; it is always attached under the *fascia tendinea,* and does not extend to the base of the cubitus; it is usually fleshy nearly to the *ligamentum carpi.*

c. The *ulna,* towards the upper extremity, is gradually curved for a considerable distance (at least from $\frac{1}{3}$ to $\frac{2}{5}$), but straight in the anterior part (consequently somewhat bowed, but not S-shaped); the condyle projects downwards a little only in consequence of its thickness. By this means the *flexor carpi ulnaris* comes to project only slightly behind the ulna.

d. The *humerus* is to a great extent uncovered, in consequence of the shortness of the *musc. deltoideus,* which in most forms reaches half the length of the humerus or is rather less, and is very narrow. Only in *Columba* does it reach $\frac{3}{4}$; in the Water-birds (*Anas, Sterna, Alca*) it is quite small.

With regard to the arrangement of the muscles the following may be remarked in general:—

The *extensor carpi radialis longus* is not larger, sometimes narrower than any of the others—*e. g.* the *flexor carpi ulnaris,* or the *extensor carpi ulnaris,* or the *pronator,* &c.

The *extensor carpi radialis brevis,* on the contrary, is large and strong (except in the Natatores).

The *extensor carpi ulnaris* is usually fleshy to the carpus, and terminates with its sinew on the underside of the middle *os metacarpi* (*i. e.* on the radial side of the carpal fissure). The tubercle upon which it terminates in the Oscines is wanting.

The *pronatores* are distinctly separated, and stronger than in the Song-birds. So also with the *supinator* and *humero-ulnaris externus*; but these latter sometimes extend no further down on the cubitus than in the Song-birds (to $\frac{1}{3}$, $\frac{1}{2}$, &c.), because the cubitus is usually much longer.

The following contains a somewhat more detailed description of the muscles of the cubitus in the forms known to me other than Song-birds, exclusive of some which deviate considerably (*Cypselus, Picus,* Ostrich, Penguin), and which will be referred to separately.

a. *On the Outer Surface.*

1. The *extensor carpi radialis longus* has a nearly cylindrical but short sinew in the Raptorial birds and in *Sterna,* a flat and broad one in most others, especially the Gallinæ. The belly of the muscle often commences with two parts (*capita*), which remain separate far down in *Grus, Ciconia, Charadrius,* some of the larger Raptores, *Mergus,* &c.; but this varies in the different Orders. In *Columba* it is unusually broad at the base and commences high up on the humerus, above the *condylus externus.*

2. The *extensor carpi radialis brevis* is very large in *Psittacus, Columba,* the Raptorial birds, the Gallinæ, and the large Waders (also in *Otis* and *Struthio*). It commences from the *basis radii* and near the *basis ulnæ,* so that its aponeurosis forms a regular *ligamentum interosseum,* and the concealed part is as thick as one of the other largest muscles. On the other hand it is quite small, as thin as a thread, in *Charadrius, Anas, Sterna, Uria,* and *Alca,* commencing only from the radius; in *Grus* and *Mergus* also only from the radius, but not so thin.

3. The *extensor digitorum communis*; rather flat and broad, but thin in the Accipitres, slender in the rest. In the Ostrich its sinew gives off no branch to the thumb (see further on).

4. The *extensor indicis proprius* is generally thick; it commences near the *basis radii* in *Sterna*; at ¼ in *Psittacus*, the Accipitres, and the Grallæ; a little further down in *Columba*, at ½ in *Aptenodytes*; and lowest down in the Gallinæ, namely at ⅗ in *Gallus domesticus*, ½ in *Tetrao*, and a little more than ½ in *Lagopus*; at ⅗ also in *Ciconia nigra*, in which it has an unusually fine sinew.

5. The *extensor carpi ulnaris* is rather thin in the Grallæ and *Sterna*, commencing by a slender sinew from the aponeurosis on the surface of the next within on the cubitus; similar, but larger and higher up towards the humerus in the Anseres, Gallinæ, and *Strix*. Fleshy nearly from the humerus in *Columba*.

6. The *humero-ulnaris externus* is thick like No. 1, and strong in all. *Columba* has it extended to half the length of the ulna, *Psittacus* to ⅗. Among the Accipitres: in *Aquila albicilla* to ½, in *Buteo, Falco*, and *Strix* a little further, in *Falco palumbarius* to ⅔. In *Anas, Uria*, and *Alca* to ⅔, in *Sterna* scarcely to ½. Among the Grallæ, to ¾ in *Scolopax* and *Fulica*, but only ⅗ in *Grus*, and ½ in *Charadrius*; in *Ciconia*, in which it is thin, and lies between the two arm-bones, scarcely to ½. It is largest of all in the Gallinæ, reaching to the end of the ulna.

7. The *supinator* is always more strongly fleshy. It extends beyond the half of the radius in *Psittacus*, to ⅔ in *Columba*, to ⅓ in the Accipitres and Waders, beyond the half in the Gallinæ (*Lagopus* ⅗, *Gallus* ⅔), to ½ in *Anas*, to ⅗ in *Mergus*, visible on both sides of the bone as in all the preceding; but in *Uria, Alca*, and *Aptenodytes* it goes on the outside only to about ⅓. For half its length it is united with the *extensor digitorum communis* in *Charadrius*.

b. *On the Inner Surface.*

8. The *flexor carpi ulnaris* has already been noticed; always thick.

9. The *rector remigum* is wanting in *Aptenodytes*. It has a long stout sinew when the cubitus is long, as in *Grus*, *Strix*, &c.

10. The *flexor digitorum sublimis.*—Its fleshy part commences in *Columba* and *Psittacus* at the base of the fascia, and is attached to its margin nearly to the carpus; it is somewhat shorter, but thick in the Accipitres, commencing from $\frac{1}{4}$ of the fascia in *Strix, Falco palumbarius, apivorus,* &c., somewhat lower down in the others, and at $\frac{1}{3}$ in the Eagles. It is least of all in the Gallinæ, just under the end of the fascia (from $\frac{1}{2}$ in *Lagopus* and $\frac{2}{3}$ in *Tetrao tetrix*); the sinew gives off a branch to the *basis pollicis,* although No. 4 also furnishes one as usual. Of the Grallæ, *Scolopax* and *Grus* have it formed as in the Accipitres; *Ciconia* and *Rallus* have it smaller; *Anas* has it fleshy from $\frac{1}{4}$ to the apex of the fascia. In *Alca* it is strong, fleshy from the base to $\frac{4}{5}$ of the fascia; in *Sterna* from the base to $\frac{1}{3}$.

11. The *flexor digitorum profundus* commences in most forms from $\frac{1}{4}$ of the ulna: *Columba,* Accipitres, and Gallinæ, *Scolopax* and *Fulica, Anas, Alca*; nearer the base in *Psittacus* and *Columba.*

12. The *flexor carpi radialis* commences a little above the middle of the ulna in *Psittacus, Columba,* the Accipitres and Gallinæ, somewhat higher in the Water-birds, but lower down in the Waders; at $\frac{2}{3}$ in *Otis, Scolopax, Struthio*; at $\frac{4}{5}$ in *Fulica,* which therefore, has this muscle unusually small (Schöpss); but from $\frac{1}{3}$ in *Grus,* and just below $\frac{1}{2}$ in *Ciconia.*

13, 14. The *pronatores* appear under two different forms. Sometimes they are of the same length, or the lower one is a little shorter, as in the Song-birds, but always widely separated; sometimes the lower one is considerably longer and thicker. The lower one is always at least as thick as No. 1, frequently (e. g. *Grus*) twice as thick; it is largest of all in *Columba,* reaching to $\frac{5}{6}$ and to the apex of the radius. In *Psittacus* they reach to $\frac{1}{2}$ and $\frac{3}{5}$, and are at their upper attachment on the humerus more widely separated than usual, so that the upper one is attached considerably higher up on the bone, near the *flexor carpi ulnaris.* In the Accipitres they usually extend to $\frac{1}{3}$ and $\frac{3}{5}$ (*Strix nisoria, Astur, Buteo*), or $\frac{1}{3}$ and $\frac{1}{2}$ (*Falco, Strix liturata*), or only to $\frac{1}{4}$ and $\frac{1}{2}$ (*Aquila albicilla*).

In the Gallinæ the upper one is somewhat longer and reaches to $\frac{3}{5}$ in *Tetrao,* $\frac{2}{3}$ in *Lagopus,* beyond $\frac{3}{4}$ in *Gallus.* The Grallæ show both forms; in *Scolopax* both extend to $\frac{1}{2}$, in *Ciconia* and *Grus* to $\frac{1}{3}$ and $\frac{2}{5}$, in *Otis* to $\frac{1}{2}$ and $\frac{2}{3}$, and in *Fulica* to $\frac{1}{2}$ and $\frac{3}{4}$. Among the Water-birds: in *Sterna* to $\frac{1}{4}$ and $\frac{2}{5}$; in *Anas* to $\frac{1}{2}$ and $\frac{2}{3}$; in *Alca* and *Uria,* in which they extend $\frac{1}{3}$ and $\frac{3}{4}$, the larger one lies externally towards the apex of the cubitus, and not under the shorter one, as it does in all other birds, or at least in a great majority of them.

15. The *humero-ulnaris inferior* has also been already mentioned. It extends in the Gallinæ to half the cubitus, where it meets with the commencement of No. 13 on the inside of the ulna and terminates at the outer margin of the latter. In *Cygnus* it was found by Tiedemann. In *Anas glacialis* and *mollissima* it starts from the condyle as a peculiar, cylindrical, and fleshy bundle, attached at $\frac{1}{4}$ of the ulna beside the *brachialis internus* and the *flexor digitorum profundus.* In *Mergus merganser* just the same, but less distinctly defined. In *Uria* it is not separated, but is represented by a part of the *pronator inferior,* the fibres of which are attached to the ulna from its base to $\frac{1}{4}$ of its length. In *Psittacus* it forms a very small bundle, issuing from the condyle under the *pronator inferior,* and is only loosely attached by cellular tissue to the upper $\frac{1}{7}$ of the ulna.

Possibly a rudiment of it has been overlooked in some of the other birds described, which I have now no opportunity of examining afresh; but it is certainly deficient in *Strix, Pernis, Grus, Ciconia, Charadrius,* and *Sterna.*

Bony sinews occur most irregularly,—*e.g.* among the Gallinæ: in *Gallus domesticus* only in the *flexor digitorum profundus* externally on the hand, but not in any in the forearm; in *Lagopus* in the forearm in the *extensor digitorum communis* and *extensor indicis,* but no more. Among the Grallæ: in *Otis* in the *flexor digitorum profundus* (Schöpss), but in *Grus* in all the *musculi carpi et digitorum* (*extensores* and *flexores*) on the cubitus, except in the *extensor indicis* (the *extensor carpi radialis longus* is bifid, with one soft and one bony sinew). Of the Accipitres, *Strix liturata* has bony sinews on the cubitus in all the *musculi digitorum et carpi* except the *flexor carpi ulnaris.*

As the result of this exposition it appears that all these birds, notwithstanding their very considerable differences, agree in the general structure of the muscles of the cubitus, and only seem to present occasional differences, owing to which the orders are difficult to characterize.

The Gallinæ, however, appear to show definite peculiarities, namely:—(*a*) the two *humero-ulnares* are unusually developed: the inner one, which is almost peculiar to them, extends to ½, and the outer one to the apex of the ulna; (*b*) the *flexor digitorum sublimis* is unusually small and shifted outwards; (*c*) the *extensor indicis proprius* commences far down (which, however, is also the case in *Ciconia*).

The other orders seem to vary more; but they nevertheless distinctly group themselves around the Gallinæ, and very closely resemble each other. From the few well-known examples they are difficult to characterize; but it must be remarked that the Raptorial birds known to me have cylindrical sinews to the most anterior muscles, a shorter *pronator superior*, a broader *extensor digitorum communis*, &c.

The Waders have a weak *extensor carpi ulnaris*, which commences upon the *humero-ulnaris externus*, but they vary much.

The Water-birds have a very small *extensor carpi radialis brevis* and *deltoideus*, but present three quite different forms: *Sterna* and the Ducks with a more ordinary external form, the latter with a small separate *humero-ulnaris interior*; and the Pygopodes with the wings much flattened, and, in consequence, an unusual appearance of the muscles and an unusual position of the *pronatores*; the *supinator* lies only on the outer side, the *fascia ulnaris* is closely attached to the ulna without any interspace, &c.

I can least of all pronounce an opinion upon the Coccyges, as only a few of the more aberrant forms of that order are known to me, and at present I have no opportunity of making up this deficiency. They seem, however, nearly to approach the Accipitres.

We pass on now to a short description of the muscles in some isolated forms which are the most aberrant that I know of.

Cypselus has appeared to me to show a single agreement with the Song-birds, namely, in the extremely small *extensor carpi radialis brevis.* It further resembles *Hirundo* only in having a *flexor digitorum sublimis,* which is nearly as large as the *flexor carpi ulnaris* and commences from the *condylus internus*; but these muscles are not placed as in the Swallow and the Oscines generally, but as in the non-Song-birds, the former being situated quite on the radial side of the latter, separated therefrom by the continuation of the *fascia tendinea*, which is distinctly of equal breadth. Moreover the bellies of the muscles are not rounded, but rectilinear, and continue fleshy nearly to the carpus. The non-Song-bird type is therefore completely retained, but in other respects the course of the muscles is very different.

The *extensor carpi radialis longus* is unusually broad, and commences above at $\frac{1}{2}$ the humerus; the *extensor digitorum communis* is also unusually broad at the root; the *extensor indicis* small, otherwise as usual; the *anconæus parvus* as usual, to $\frac{1}{2}$; the *flexor digitorum profundus* inserted on the *condylus internus humeri* ! and nearly as large as the *extensor carpi radialis longus*; course of the sinews as usual. The *flexor carpi radialis* commences near the base of the ulna. The *pronatores* are very strong, the upper one something more than $\frac{1}{2}$, the lower one rather over $\frac{3}{4}$, contracted at the apex, not dilated ! The *supinator* to $\frac{1}{2}$.

Picus agrees in most respects with the Song-birds, so that we need only indicate the differences, all of which show an approximation to the non-Song-birds. They are as follows :—

a. The *pronator inferior* has an unusual structure, which I have seen elsewhere only in *Pernis apivorus*; for it is attached to the *membrana interossea* and to the ulna just as much as to the radius (in one specimen of *Picus major* it was only attached to the ulna; but in two others, and in *P. martius*, was as just mentioned); it extends somewhat beyond $\frac{1}{2}$ of the cubitus. The *pronator superior* is distinctly separated and somewhat longer; the *supinator* also rather beyond $\frac{1}{2}$.

b. The *bellies of the muscles* are less convex and rather longer than in the Oscines, in consequence of which the pits on the forearm are shorter. To this it is due that the *flexor carpi radialis* commences far down, at $\frac{2}{5}$.

c. The curvature of the *ulna* is somewhat longer (to $\frac{1}{4}$) at the upper extremity, inconsiderable at the anterior extremity; whence follows a position of the posterior flexors which begins to differ somewhat from that in the Song-birds.

d. The *fascia ulnaris* is filiform, although a distinct streak. The *flexor digitorum sublimis*, which is attached to it, is like that of the Song-birds in *Picus major*; but in *P. martius* it has a much more elongated belly; it goes to $\frac{2}{3}$ of the cubitus and commences a little way from the humerus.

e. The *deltoideus* is much smaller than in the Oscines, only to $\frac{3}{4}$ of the humerus.

Jynx torquilla resembles *Picus*: but both *pronatores* are inserted on the radius, the superior at $\frac{3}{5}$, the inferior at $\frac{1}{2}$. They are much stronger than in the Oscines and more distinctly separated. The *flexor digitorum sublimis* is much thicker than in the Song-birds, fleshy for $\frac{3}{4}$ of its length, and placed beside the *flexor carpi ulnaris*. The *extensor carpi radialis brevis* as in the Song-birds.

Columba, which has been referred to in the general description, presents nearly equal peculiarities in its broad *extensor carpi radialis*, its enormously large *pronatores*, &c. It has, further, an unusually constructed muscular apparatus within the fold of skin in front of the humerus.

The *Ostrich*, according to the description given by Schöpss, has many peculiarities, and therefore the following extract may be given:—

The *extensor carpi radialis longus* commences high up on the humerus, at $\frac{5}{6}$.

The *ext. carpi rad. brevis* is as in the Grallæ &c.

The *ext. digitorum communis* has no sinew to the thumb.

The *ext. indicis*, from $\frac{1}{3}$ of the radius, has many accessory muscles.

The *ext. carpi ulnaris* is half united with the *humero-ulnaris externus,* which extends to $\frac{2}{5}$.

The *supinator* strong, to $\frac{2}{3}$.

The *flexors* nearly as in the Waders &c., but the sinew of the *flexor digit. profundus* gives off a branch to the thumb, instead of the *ext. digit. comm.*

The *pronator* is single, to $\frac{2}{3}$.

The *biceps* has only the *caput longum.*

The *deltoideus* also arises from the clavicle, and therefore more resembles that of the Mammalia; it terminates at $\frac{2}{3}$ of the humerus.

The *tensor plicæ cutaneæ* and *rector remigum* occur, notwithstanding the undeveloped state of the wing.

Aptenodytes, next to the Ostriches, is the most aberrant of all known forms of birds, and therefore the following abstract, also from Schöpss's description, may be of interest in this place. The wing is perfectly formed, as in birds, and only in its external form and strong compression has it some resemblance to the pectoral fin of a whale, shark, &c.

The *extensores carpi radiales longus et brevis* are nearly as usual, the latter not small.

The *extensor digitorum communis* gives off at the carpus a branch to the *extensor indicis proprius.*

Of the *extensor carpi ulnaris* there remains only a rudiment of sinew-fibres.

The *humero-ulnaris externus* is small.

The *supinator* to $\frac{1}{2}$; as in *Alca,* only on the outer side of the radius.

Of the two *pronatores* only sinewy rudiments.

The *flexor carpi ulnaris* seems to consist only of a sinew (perhaps the *fascia ulnaris*?), and the *rector remigum* is wanting. On the other hand the *flexor digitorum sublimis* commences from the condyle,and its sinew terminates on the second phalange.

The *flexor digitorum profundus* is not small; also from the radius.

The *flexor carpi radialis* consists only of a few sinewy fibres, as also the *flexor* and *extensor ulnares.*

The *biceps* is wanting, but the *brachialis internus* passes higher up.

The *deltoideus* is very small.

The *tensor plicæ cutaneæ* occurs, although the wing can bend but little.

CONCLUDING REMARKS.

From what precedes, it appears distinctly that, as regards the external and internal structure of the wing, the Song-birds show a remarkable uniformity. They do the same in all other respects, and it is only necessary to add to the differences from other birds here enumerated, the muscular apparatus of the lower larynx, which is peculiar to them, in order to prove clearly that they constitute a definite and peculiar group in the class of Birds, scarcely containing any transitional forms. That, however, the so-called "song-muscles" must be regarded as the expression of a peculiarity in the whole organization, and not merely as a singing-apparatus, is shown distinctly by the fact that they occur in all the species constructed in a certain way, of which a great part do not possess anything that can be called "song;" *e. g.* the *Corvi, Garruli,* and a number of exotic forms, as also the *females* which do not sing. Moreover there is a true song in many species which are destitute of the above-mentioned muscles; for example, in the Diving-ducks, a few Accipitres, the domestic fowl, *Coturnix.* The "play" of the Tetraones, the cry of *Meleagris,* the peculiar sounds produced during the breeding-season by *Perdix, Scolopax,* and many Tringariæ, are essentially exactly the same as the song of the small birds.

It is equally easy to see distinctly that the Water-birds in all respects constitute the most divergent contrast to the Song-birds, and that the Waders and Gallinæ are joined with them, these three orders closely agreeing in most particulars.

The Accipitres, indeed, at the first glance, seem to present much difference by reason of their large wings; but if we accurately compare them, it is found that these wings scarcely differ in any respect from those in a considerable number of the Waders and Water-birds, which also have long wing-bones and remiges (e. g. *Ciconia, Ardea, Larus*), and that their whole structure and feathery covering is exactly the same as in the three orders above mentioned. It is unnecessary to cite examples of this, as they occur upon every one of the preceding pages. If other parts of the body are taken into consideration, we always find in the fundamental form the same definite divergence from the Song-bird type, and agreements with the Gallinæ, Waders, and Water-birds. The Accipitres and the Gallinæ appear as two modifications of the same form, developed in different directions; the latter, both externally and internally constructed to feed on vegetable diet, with a strongly muscular stomach adapted in other respects thereto, with a large cæcum, with beak and claws not very acute, with no need of strong flight, &c.; the former converted into an animal of prey, with a thin stomach and in general a smaller intestine, with stronger organs of capture, and especially a great power of flight. But the near affinity between them appears distinctly in the downy covering, the arrangement of the feathers, the structure of the arm, the whole construction of the feet, and even in the form of the beak and claws in the Vulturini and a great number of the American species of *Buteo* and *Aquila*, when compared with those of the Gallinæ. Like the next forms, however, the Raptorial birds approach the Song-birds by a greater development of the posterior toe, and also by the incomplete structure of the young and the necessity of feeding them. The hinder toe, however, never acquires the form which alone belongs to the Song-birds, but always retains the same type as in the preceding, and is somewhat elevated at the root.

The remaining forms of birds (the Doves, Parrots, Cuckoo-like birds, and Pici) range themselves with the exception of the last named, just as distinctly, with the same great division of the class; but also show, besides the peculiarities just mentioned, some further resemblances to the Song-birds, in the generally smaller number of the arm-remiges, and the smaller number of rows of the inferior coverts. Their colours also, the external aspect of the bill and feet (but certainly not their structure), their smaller size and residence in trees, cause one to fancy that they are like the Song-birds, with which they have constantly been confounded. The case is different with *Picus*, for this genus appears to be a true transitional form, which, from its wing-structure, seems most to resemble the Song-birds; but its want of the song-muscles, the structure of its feet, and the arrangement of the muscles of the wing, in combination with the abovementioned character of the small outer coverts, determine most distinctly its place to be among the Cuckoo-like birds.

We have here endeavoured to show that although there are manifold and considerable differences between the birds which are destitute of the song-apparatus, nevertheless they all possess a decided similarity of organization, owing to which they can and must be grouped together as a single great division of the class, in opposition to the Song-birds, which have another very distinct fundamental structure, but which present a very remarkable uniformity. This binary division is therefore the first natural division of the class of Birds; the Song-birds must stand at one end of the series, and next to them come the Pici, Coccyges, &c. The other end is necessarily occupied by the Natatores. The Accipitres and Gallinæ must retain their place in the middle of the series, which, however, certainly does not prevent our regarding them as the most highly developed, if we choose to do so.

I have already developed these same views of the affinities and scientific arrangement of the forms of birds in my "Ornithologiska System," published in 1835 in the Kongl. Vet.-Ak. Handl. and they have only been strengthened by a continued investigation, although many alterations in the more special groupings have been rendered possible by an enlarged knowledge.

In order to give a summary of the more important of these alterations the following Appendix is provided.

APPENDIX I.

*Systematic Arrangement**.

In order to avoid too many degrees of division we shall only remark here that the so-called *Song-birds* alone are included in the undermentioned Legio prima; and that all the others, which constitute Legiones secunda, tertia, and quarta, have not five pairs of muscles to the lower larynx. The differences in structure of these two chief divisions have been copiously referred to in what precedes, as also in the often cited "Ornithologiska System" in Vet.-Acad. Handl. for 1835.

If, with the view of obtaining greater symmetry in the arrangement, it be desired to retain the binary division in accordance with the nature of the hinder toe and the young, adopted in the place just cited and by many authors, we get the first two "Legiones" together in one, and the last two in the other division; but we are then compelled to remark (as I have done, *loc. cit.* p. 67) that the species belonging to the Legio secunda resemble those of Legiones tertia and quarta in the principal parts of their structure, but not those of the Legio prima with which they are arranged. It must also be remarked that the hinder toe in a Raptorial bird, a Cuckoo, or even a *Picus* is never so large or formed in the same way as in a Song-bird; it is always narrower at the base, a little raised, &c., and approaches the form of that in the Gallinæ, Waders, and Water-birds; and, further, that many genera with long supporting hinder toes occur in both the great divisions, which usually have it small and uplifted, namely, *Penelope*, the whole cohort of the Herodii (*Ardea*), and the whole Order Totipalmes.

Legio prima ("VOLUCRES," Vet.-Acad. Handl. 1835).

Constitutes only the Ordo prima †.

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* [It will be of course recollected by our readers that this arrangement was in considerable degree modified by the author in his 'Tentamen' (187—?).—ED.]

† The divisions which are here cited immediately under the Orders correspond exactly to those which are called "Zunft" by Oken, which

1. PASSERES (Nares plumis tectæ, carent membrana).
    - *a.* (Integrirostres): Ploceinæ; Sermininæ; Loxiæ.
    - *b.* (Incisirostres): Fringillinæ; Pitylinæ; Emberizinæ.

2. OSCINES.
    - *a.* (Membr. narium fornicata, nuda).
        - *(Alæ mediocres): Sturninæ; Alaudinæ; Turdinæ (cum *Sylviis* et *Cinclo*).
        - *(Brevipennes): Myotherinæ; Timaliinæ; Maluri; Anabatinæ.
        - *(Longipennes): Hirundininæ.
    - *b.* (Membr. narium obsoleta, plumosa).
        - *(Depressirostres): Muscicapinæ; Tyranninæ (cum *Platyrhyncho, Euscarthmo,* &c.).
        - *(Compressirostres): Laniinæ (cum *Thamnophilis*); Garrulinæ; Corvinæ; Paradiseæ; Tanagrinæ; Parinæ.
        - *(Syndactylæ): Piprinæ; Eurylaimi.

3. LONGILINGUES (Omn. membr. narium fornicata).
    Gymnopinæ; Meliphaginæ; Cinnyrinæ; Dacnidinæ.

4. SCANSORES (Ungue medio non obliquo &c.).
    - *a.* (Membr. narium fornicata): Certhiaceæ.
    - *b.* (Membr. narium obsoleta, plumosa): Dendrocopinæ; Sittinæ.

Legio secunda ("GRESSORES," *loc. cit.*).

Ordo 2. COCCYGES.

1. PICIDÆ: *Picus, Jynx.*
2. CUCULIDÆ: Bucconinæ (cum *Rhamphasto* et *Galbula*); Cuculinæ; Trogoninæ.
3. SYNDACTYLÆ: Alcedinidæ (et *Merops*); Coraciinæ; Musophaginæ (cum *Colio*).
4. MACROCHIRES, Nitzsch: Caprimulginæ; Cypselinæ; Trochilinæ.
5. COLUMBÆ.

---

term may be translated "cohors." They are larger than the "Familiæ" of recent writers, but do not represent such considerable peculiarities of form as the Linnean *Ordines.*

6. PSITTACI : Loriinæ ; Androglossinæ ; Plyctolophinæ ; Sittacinæ ; Pezoporinæ.

Ordo 3. ACCIPITRES.

1. NOCTURNI : Striginæ.
2. DIURNI : Falconinæ, &c......; Aquilinæ ; Vulturinæ.

Legio tertia ("CURSORES").

Ordo 4. GALLINÆ.

1. PENELOPINÆ : *Penelope, Crax.*
2. GALL. PROPR. : Phasianinæ ; Tetraoninæ ; Pteroclinæ ; Crypturinæ.

Ordo 5. STRUTHIONES.

1. *Struthio,* Linn.
2. *Apteryx.*

Ordo 6. GRALLÆ.

1. ALECTORIDES : Otidinæ ; Palamedeinæ ; Gruinæ ; Rallinæ.
2. LIMICOLÆ : Thinocorinæ ; Charadriinæ ; Tringariæ.
3. PELARGI, Nitzsch : Ciconinæ (? *Phœnicopterus*).
4. HERODII : *Ardea, Cancroma.*

Legio quarta ("NATATORES").

Ordo 7. ANSERES.

1. *Anas,* Linn. —— —— ——.

Ordo 8. GAVIÆ.

1. LONGIPENNES : *Sterna, Larus.*
2. TUBINARES : *Diomedea, Procellaria, Haladroma.*

Ordo 9. STEGANOPODES.

TOTIPALMES, Auct.

Ordo 10. PYGOPODES.

1. EUDYTÆ : *Podiceps, Colymbus.*
2. URIÆ et ALCÆ.
3. APTENODYTINÆ.

APPENDIX II.

Synopsis of the number of Arm-remiges.

Of the figures which are given below, the first always indicates the number of the arm-remiges which appear nearly alike in structure and size, and in this number the first is always included. The last number always indicates the last, decidedly shorter feathers. Where three figures occur, the middle one denotes those which, without being abbreviated, possess a decidedly different form; and such occur nearly always when the posterior remiges differ considerably (difformes). The figures placed within parentheses show the whole number, and when this stands alone it is generally copied from Nitzsch's 'Pterylographie,' for the purpose of obtaining a more complete view.

In the greater part of the Song-birds the number is definitely 9. All that are known to possess a greater number (about 12 genera) are cited in the following table; in these and all which have more than 9, the number appears to be subject to a little variation—for example, in *Corvus cornix* I have twice found 11. In the Waders and Water-birds it appears that the variation may amount to 2 or 3, without relation to the moulting. This subject deserves to be particularly investigated; possibly the number is not variable.

PASSERES in general	6+3	(9)
Fringilla cœlebs, Pyrgita, Emberiza	6+1+2	„
OSCINES.		
Sturnus vulgaris	7+2	„
Psarocolius, *Wagl.*	„	„
Gracula, sec. Nitzsch	....	„
Alauda, Motacilla, Anthus	6+1+2	„
Turdi	7+2	„
Saxicola rubetra	7+2	„
—— œnanthe	6+1+2	„
Sylvia phœnicurus, &c.	6+1+2	„
—— rubecula	5+4	„
Cinclus	6+3	„
Troglodytes	6+3	„
Menura	7+4	(11)

Oscines (*continued*).		
Hirundo	7+2	(9)
Muscicapa atric. et grisola	6+1+2	”
Chasmorhynchus	....	(10)
Coracina	7+3	”
Lanius collurio	6+1+2	(9)
—— excubitor	7+2	”
Ampelis garrulus	7+2	”
Ocypterus	8+2	(10)
Thamnophilus striatus	....	”
Pica melanoleuca	6+3	(9)
—— fuliginosa (sec. Nitzsch)	....	(10)
—— azurea (do.)	....	”
Barita	....	”
Ptilonorhynchus holos	9+5	(14)
Corvus corax, frugilegus	8+3	(11)
—— cornix, monedula	7+3	(10)
Caryocatactes	7+3	”
Paradisea apoda (a prima gradatæ)	....	”
Epimachus	....	”
Parus major, ater	5+4	(9)
—— cristatus, caudatus	3+6	”
Regulus	4+5	”
Longilingues, Cinnyris	7+2	(9)
Scansores.		
Certhia familiaris	5+4	(9)
Sitta europæa	6+3	”
Coccyges.		
Picus major, tridactylus	7+3	(10)
—— martius, viridis	7+4	(11)
Jynx	6+1+3	(10)
— Bucco cyanocollis	7+4	(11)
Lypornis tenebrosa	8+3	”
Rhamphastos, *Linn.*	8+5	(13)
Galbula	....	(10–12)
Cuculus canorus	7+2	(9)
Centropus; Eudynamis	”	”
Coccyzus; Crotophaga	....	(10)
Trogon narina	8+2	”
— Alcedo ispida	8+3	(12)
Halcyon	....	(14)
Merops viridis	10+1+2	(13)
Coracias	9+1+3	(13)
Prionites	6+5	(11)

COCCYGES (*continued*).

Buceros	(9+3 or 6+6)	(11–17 Nitzsch)
Upupa epops	7+3	(10)
Musophagæ	....	(12–13)
Colius	....	(9)
— Columba turtur, œnas, palumbus	8+1+3	(12)
—— livia	8+3+3	(14)
—— coronata	....	(15)
Caprimulgus europæus	10+3	(13)
Podargus gigas (sec. Nitzsch)	....	(11)
Cypselus	6+2	(8)
Hemiprocne	....	(6)
Trochilus	4+2	,,
— Psittacus domicella	....	(11)
—— (Trichoglossus)	....	,,
—— amazon. et leucoceph.	10+3	(13)
—— magnus	,,	,,
—— erithacus (14 Nitzsch)	,,	,,
—— menstruus	....	(12)
—— pullarius	....	(10)
Calyptorhynchus	10+2	(12)
Plyctolophus	....	(13)
Sittace macao (13)	11+3	(14)
—— sp. minores	....	(11)
Palæornis torquatus	9+3	(12)
Platycercus	8+3	(11)

ACCIPITRES.

Strix flammea	....	(14)
—— otus, brachyotus	11+2	(13)
—— lapponica, liturata	11+3	(14)
—— aluco	,,	,,
—— tengmalmi, scops	10+3	(13)
—— bubo (19 Nitzsch)	14+4	(18)
—— lactea, nyctea (do.)		
—— noctua, nisoria	12+3	(15)
—— asio	....	(12)
—— passerina, *Linn.*	10+3	(13)
Falco subbuteo	11+3	(14)
—— tinnunculus	11+2	(13)
Astur palumbarius	11+3	(14)
—— nisus	11+2	(13)
Pernis apivorus	,,	,,
Circus	....	(14)
Buteo vulgaris	13+2	(15)

ACCIPITRES (*continued*).

Aquila chrysaëtos	13+4	(17)
—— albicilla	15+3	(18)
Pandion haliaëtos	16+3	(19)
Polyborus aterrimus	....	(12)
Gypaëtos barbatus	18+3	(21)
Vultur fulvus	22+4	(27)
—— cinereus	....	(25)
Cathartes gryphus	23+3	(26)
—— papa	....	(22)
Neophron monachus	....	(18)

GALLINÆ (obs. prima brevis).

Meleagris, Pavo	....	(18)
Phasianus, Lophophorus	....	(16)
Gallus bankiva	....	(14)
—— domesticus	1+9+5	(15)
Numida	....	(14)
Cryptonyx	....	(12)
Tetrao urogallus	1+14+5	(20)
—— tetrix	1+12+4	(17)
Lagopus saliceti	1+12+3	(16)
—— alpina	1+12+4	(17)
Perdix petrosa, cinerea	1+10+3	(14)
—— coturnix	....	(12)
Pterocles	....	(18)
Crypturus	....	(16)
Penelope	....	(13–15)

GRALLÆ.

Otis tetrax	12+2+6	(20)
—— afra	11+5+3	(19)
Palamedea	14+3	(17)
Psophia	....	(14)
Grus cinerea (23 Nitzsch)	16+4+4	(24)
— Fulica atra	9+3+5	(17)
Rallus crex	9+1+4	(14)
—— aquaticus	7+3+2	(12)
— Scolopax rusticula	12+4	(16)
—— gallinula	10+2+2	(14)
Tringa maritima	10+2+2	(14)
—— ferruginea	,,	,,
Phalaropus rufus	10+2+1	(13)
Totanus calidris, ochropus	11+2+2	(15)
—— glottis, fuscus	11+3+3	(17)

GRALLÆ (*continued*).

Limosa meyeri, rec.	12+3+2	(7)
Numenius arquata	15+2+3	(20)
—— phæopus	14+2+3	(19)
Rhynchæa	....	(10)
Recurvirostra avoc.	14 ?	(20 Nitzsch)
Hæmatopus	16+3	(19)
Charadrius cantianus	10+3+3	(16)
—— morinellus, minor	,,	,,
Thinocorus ; Glareola	,,	,,
Strepsilas interpres	10+2+4	(16)
Vanellus cristatus	14+2+3	(19)
Œdicnemus	....	,,
Phœnicopterus antiq.	24+3	(27)
Ciconia nigra	18+3	(21)
—— argala	....	(26)
Anastomus	....	(17)
Scopus	....	(16)
Ibis (16–20 Nitzsch)		
Ardea cinerea	16+3	(19)
—— sp. minores	....	(15)
Cancroma	....	(12)

ANSERES.

Cygnus musicus	21+2	(23)
—— olor	18+3	(21)
Anser leucopsis	15+1+3	(19)
—— albifrons	14+1+3	(18)
Anas tadorna	....	(20)
—— penelope, acuta ♂ ♀	10+3+2	(15)
—— glacialis, fusca	10+2+3	,,
—— clangula, nigra	....	,,
—— marila	....	,,
—— molliss., spectab., ♂ perf.	9+4+4	(17)
—— ,, ,, ♀ perf.	11+3+3	,,
Mergus albellus	10+3+3	(16)
—— serrator	11+3+3	(17)
—— merganser	12+3+3	(18)

GAVIÆ.

Sterna arctica	13+5	(18)
—— hirundo	16+2+2	(20)
—— caspia	20	(20)
—— minuta	....	(16)
Larus glaucus, fuscus	20+2	(22)
—— marinus	20+3	(23)

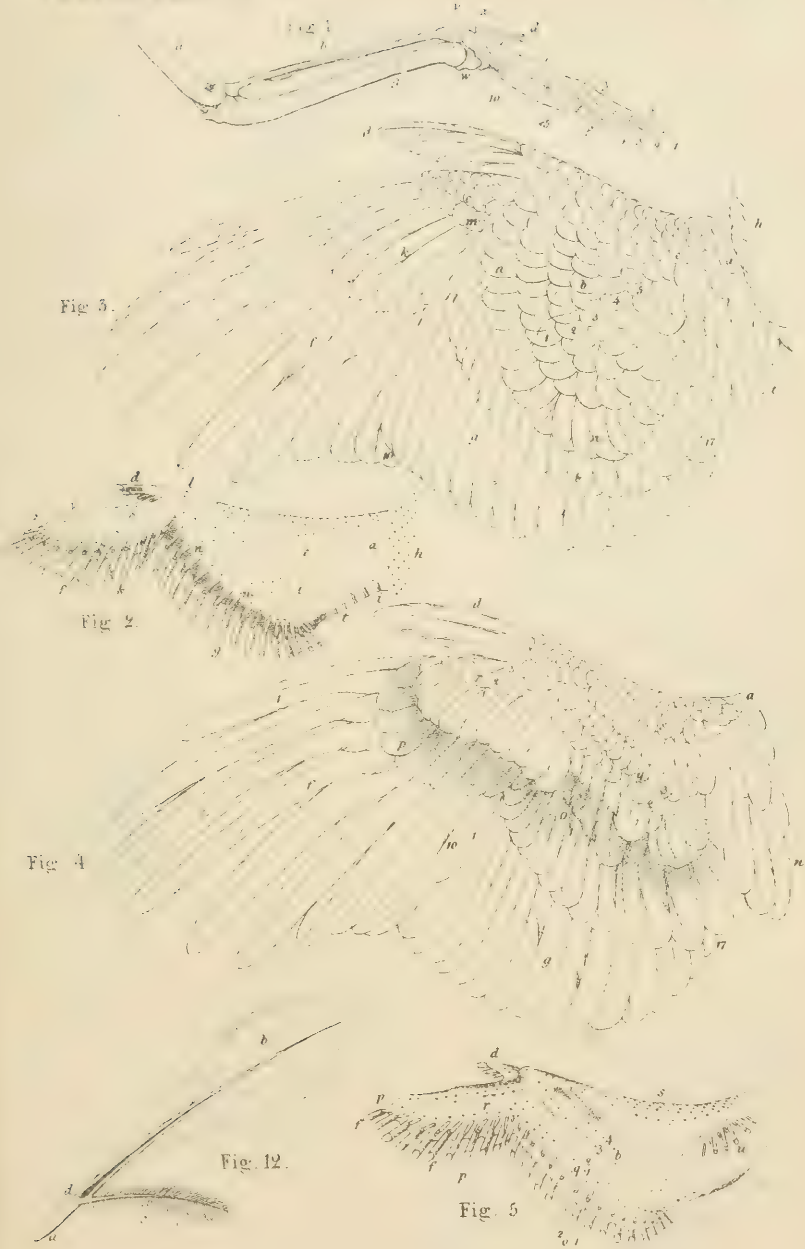
Fig. 1
Fig. 11
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Fig. 4
Fig. 12.
Fig. 5
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F Dangerfield, lith

WINGS OF BIRDS

K. Vet. Ac. Handl. 1843

Pl. III

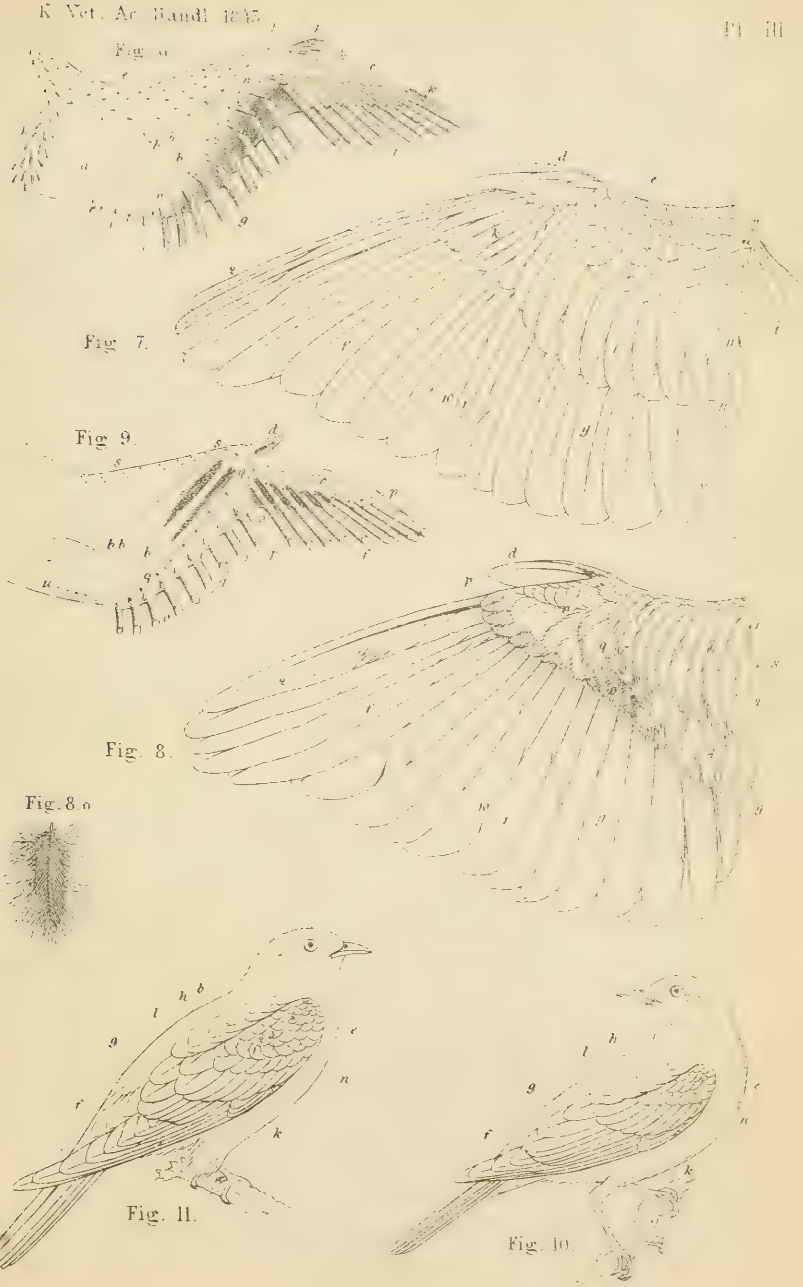


Fig. 6
Fig. 7.
Fig. 9.
Fig. 8.
Fig. 8 a
Fig. 11.
Fig. 10.

F. Dangerfield lith. L

WINGS OF BIRDS.

GAVIÆ (*continued*).		
Larus canus	18+2	(20)
—— eburneus	17+3	„
Lestris parasitica (19+3?)	18+2	„
Procellaria glacialis	„	„
—— pelagica	11+2	(13)
—— gigantea	....	(30)
Diomedea exulans (40 Nitzsch)	36+2	(38)
STEGANOPODES.		
Pelecanus	....	(29)
Tachypetes	....	(24)
Dysporus sula	....	(28)
Plotus	....	(16)
Graculus carbo	18+3	(21)
—— cristatus	13+2	(15)
PYGOPODES.		
Podiceps crist. et rubric. (16+1?)	17+3	(20)
Colymbus arcticus	20+3	(23)
—— septentrionalis	19+3	(22)
Alca alle; A. pica, *Linn.*	13+3	(16)
Mormon arcticus	13+2	(15)
Uria grylle...... (11+8; 12+6)	14+3	(17, 19)
—— troile	14	
Alca torda	17+3	(20)

XL.—*Note on the Nestling Plumage of* Gypoictinia melanosternon (*Gould*).

By JOHN HENRY GURNEY.

IN 'The Ibis,' 1884, at p. 465, will be found some particulars respecting that very rare Raptorial bird *Gypoictinia melanosternon*, which were communicated to me by Mr. K. H. Bennett.

The Norwich Museum has recently received from this gentleman a fledged nestling of this species, taken from the nest near Mossgiel, in New South Wales, on the 6th of December, and supposed by Mr. Bennett to be "between two and three months old."

The following is a description of this specimen, which I am desirous of recording, as, so far as I am aware, no account has previously been given of the first plumage of this species, and as, in this stage, it differs conspicuously from its adult dress.

In the nestling now before me the feathers on the crown of the head are blackish brown, edged with rich rufous-brown; this rufous tint, unmixed with the darker brown, extends over the sides of the head behind the eye and above the ear-coverts, over the back of the neck, and, with the exception of some narrow dark shaft-marks, over the sides of the neck also; the lores are blackish brown, and the ear-coverts are of a similar hue, but slightly intermingled with rufous; the interscapular feathers and those of the back and upper tail-coverts are blackish brown, conspicuously edged with rufous; the scapulars are similar, but with the rufous edgings broader; the wing-coverts are blackish brown, narrowly edged with rufous, except the upper secondary coverts, which are almost entirely rufous, but with dark shaft-marks, most of which are, however, quite narrow; the secondary and tertial wing-feathers resemble the greater wing-coverts, but with narrow whitish tips; those of the bastard wing are black, tinged with grey towards the base, and slightly tipped with fulvous white; the primaries are similarly coloured, but without the grey tinge; the rectrices are greyish brown, with narrow fulvous edgings towards the tips of the feathers, but the extreme tips of the tail-feathers are white; the entire under surface (other than that of the remiges and rectrices) is a rich rufous-brown, darkest about the upper breast, with strongly marked dark shaft-marks everywhere except upon the under wing-coverts and the tibia (where these marks are very sparse), the under tail-coverts (where they are very faint), and the abdomen (where they are absent).

Mr. Bennett states that the irides are light brown in the young bird, and reddish or hazel-brown in the adult, also that the legs and feet are white in both, but in the adult bird are tinged with pinkish.

The Norwich Museum possesses three eggs of this species, which are white, mottled with reddish brown; and four specimens of the bird, viz. one adult male, two adult females, and the nestling above described.

XLI.—*Description of a new Species of the Genus* Empidonax *from Guatemala.* By Robert Ridgway, Curator Department of Birds, United States National Museum.

EMPIDONAX SALVINI, sp. nov.

Sp. Char.—Similar to *E. bairdi,* Sclater, but much brighter-coloured, the upper parts olive-green instead of olive-brown, the lower parts brighter and clearer yellow, shaded across breast and along sides with olive-green instead of brownish; wing-bands light greenish olive instead of ochreous brown, and under wing-coverts pale greenish yellow (almost sulphur-yellow) instead of deep brownish ochre.

Young male (type No. 84053, U. S. Nat. Mus., Calderas, Volcan de Fuego, Guatemala, Oct. 10, 1873, O. Salvin). Above uniform bright olive-green; wings and tail dusky, the former with two distinct bands (across tips of middle and greater coverts) of pale ochraceous or buff; remiges and rectrices edged with light greenish olive, the secondaries, however, with the basal portion uniform dusky. Lower parts yellowish olive, paler and greyer on throat, and becoming clear pale dull sulphur-yellow on abdomen, flanks, and under tail-coverts; axillaries and under wing-coverts yellowish white, tinged with sulphur-yellow, the edge of the wing much deeper yellowish, with a buffy tinge. A very distinct orbital ring of paler yellowish. Upper mandible black, lower entirely whitish (yellowish in life?). Feet brownish. Wing 2·75, tail 2·50, culmen ·60, width of bill at base ·29, tarsus ·70, middle toe ·37.

Adult male (Mus. P. L. Sclater; same locality, &c.). Similar to the young, as described above, but wing-bands greenish olive instead of buffy, and yellow of lower parts rather brighter. Wing 2·90, tail 2·65, culmen ·62, width of bill at base ·25–·28, tarsus ·68, middle toe ·38.

This form is almost exactly intermediate between *E. bairdi,* Scl., of Southern Mexico, and *E. flavescens,* Lawr., of Costa Rica—so much so, in fact, that it is not easy to decide as to which it is most nearly related. In the colour of the upper parts it is more like the latter than the former, and the colour of the wing-bands is almost exactly the same. The yellow of the lower parts, however, is not quite so deep, the breast is a decidedly more greenish olive, and the under-wing-coverts much paler yellow.

XLII.—*On* Empidochanes fuscatus (*Max.*) *and* Empidonax brunneus, *Ridgw.* By ROBERT RIDGWAY.

EMPIDONAX BRUNNEUS was first described in the 'History of North-American Birds,' vol. ii. (1874), p. 363, and was based on a specimen collected by Captain T. J. Page, U.S.N., during his exploration of the Paraná in 1850. In addition to the type (No. 20970, U. S. Nat. Mus., orig. no. 54, Paraná, March 1850), the collection of the United States National Museum contains another specimen (No. 23984), but the exact locality of the latter is unknown.

It has usually been considered (although I cannot find that such an opinion has been published) that *Empidonax brunneus* was merely *Empidochanes fuscatus* (Max.), redescribed; but that this is not the case I am now able to demonstrate, having had the opportunity, through the courtesy of the Trustees of the American Museum of Natural History in New York city, of examining the types of *Muscipeta fuscata*, Max. (still existing in the Maximilian collection, for some years the property of that Institution), and of comparing them with the two specimens of *Empidonax brunneus*.

The differences between the two birds are very marked, involving, as they do, not merely the specific but also the generic characters. In coloration they present a rather close superficial resemblance to one another; but *E. brunneus* has the under mandible wholly light-coloured, the upper parts decidedly more olivaceous, and the wing-bands paler and less ochraceous.

The genus *Empidochanes* differs from *Empidonax* mainly in the much less depressed and relatively longer and narrower bill, longer and decidedly rounded tail, and stouter feet. All these characters are shared about equally by the three very distinct species which I have been able to examine, viz. *E. fuscatus* (Max.), *E. fringillaris,* Pelz., and a very strongly-marked species from Tobago, which Mr. Lawrence has doubtfully determined as *E. oliva* (Bodd.). These three species differ as follows :—

a^1. Upper parts umber-brown, the wing-bands ochraceous or rusty.

  b^1. Lower mandible with basal half light-coloured (whitish in dried skins). Wing 2·70–2·90, tail 2·75–2·85, exposed culmen ·48–·52, tarsus ·70.—*Hab.* Southern Brazil .... *E. fuscatus.*

  b^2. Lower mandible entirely dusky ; plumage darker throughout. Wing 2·85, tail 2·85, exposed culmen ·50, tarsus ·70.—*Hab.* Eastern Brazil (Bahia) *E. fringillaris.*

a^2. Upper parts greyish brown, the wing-bands greyish buff, or isabelle colour.

  b^3. Lower mandible entirely dusky. Wing 2·75, tail 2·80, exposed culmen ·55, tarsus ·72.—*Hab.* Tobago .... *E. oliva ?*

Should the Tobago bird prove distinct, I propose for it the name Empidochanes vireoninus, the general appearance of the bird suggesting a rather large "*Vireosylvia*" with distinct wing-bands. Regarding the identification of the *Muscicapa oliva* of Boddaert with either of the three species characterized above, I have only to remark that the figure (Pl. Enl. 574. fig. 2) upon which it is based presents not the least resemblance to either of them, so far as I am able to see.

XLIII.—*On the Species of the Genus* Empidonax.

By Robert Ridgway.

From the genus *Empidonax* I would remove the following species :—(1) *E. atriceps,* Salv., which seems to me much closer to *Mitrephanes,* if not strictly congeneric with *M. phæocercus* and *M. aurantiiventris* ; and (2) *E. nanus,* Lawr., which I have made the type of a new genus (*Lawrenceia*), characterized in the July 'Auk,' p. 382.

On the other hand, I would add to the genus *Mitrephanes* *fulvifrons* (Scl.), which, so far as I can see, differs from the typical species only in coloration, and not essentially in this respect.

Both *Mitrephanes* and *Empidochanes* are nearly related to *Empidonax,* but seem to be sufficiently distinct to pass for genera, as genera go among Passerine birds. Compared with *Empidonax,* their more obvious characters are as follows:—

Mitrephanes. Rictal bristles much more lengthened, pileus much more conspicuously crested, bill narrower at tip and more depressed; wings and tail proportionately longer, and feet weaker; tail more deeply emarginate than in any species of *Empidonax.* Includes *M. phæocercus, M. aurantiiventris,* Lawr., and "*Empidonax*" *atriceps,* Salv.

Empidochanes. Bill much less depressed, as well as relatively longer, its depth at base being decidedly greater than one half the width; tail decidedly rounded instead of even or emarginated. Includes *Muscicapa fuscata,* Max., *Muscicapa oliva,* Bodd. (?), *M. fringillaris,* Licht., and perhaps *E. pœcilurus,* Scl., and *E. pœcilocercus* (neither of which have I seen), but not *Empidonax brunneus,* Ridgw., which I have been able to compare with the types of *Muscicapa fuscata,* Max., in the American Museum, New York.

Key to the Species of EMPIDONAX.

*a*¹. Width of bill at nostrils decidedly greater than half the length of the exposed culmen.
  *b*¹. Lower parts deep buff, deepening into ochraceous on breast and sides.
    *c*¹. Upper parts deep hair-brown.
      *d*¹. Lower parts soft pinkish buff, inclining to isabelle colour on breast, paler on throat and belly, nearly white on under tail-coverts. Wing 2·70 inches, tail 2·45; culmen, measured in each case from extreme base, 0·52; tarsus 0·60; width of bill at base, measured at anterior extremity of feathering of forehead, 0·21.—*Hab.* Eastern Mexico (north into Southern Texas?) .... *E. fulvifrons.*
      *d*². Lower parts bright ochraceous buff, inclining to deep ochraceous on breast and pale buffy

yellow on belly, the throat buffy whitish, and lower tail-coverts yellowish white. Wing 2·35–2·55 (average 2·43) inches, tail 1·90–2·15 (2·05), culmen 0·48–0·50 (0·49), width of bill at base 0·20, tarsus 0·52–0·58 (0·56).—*Hab.* Southern Mexico .... *E. fulvifrons rubicundus.*

c^2. Upper parts dull greyish brown, lower parts pale buff, deepening into ochraceous buff on breast. Wing 2·20–2·45 (2·34) inches, tail 1·95–2·14 (2·06), culmen 0·50–0·55 (0·52), width of bill at base 0·20–0·22 (0·21).—*Hab.* North-western Mexico and contiguous portions of Arizona and New Mexico .... *E. fulvifrons pygmæus.*

b^2. Lower parts whitish or yellowish, shaded across breast with greyish or olivaceous.

c^1. Upper parts umber-brown.

d^1. Lower tail-coverts buff; whitish in very much worn specimens only. Above brownish, darker on top of head, the wing-bands varying from dull light brownish buff to tawny; chin and throat white; rest of lower parts pale smoky buff, shaded across breast with smoky brown; under wing-coverts deep buff or ochreous. Wing 2·35–2·40 (2·37) inches, tail 2·15–2·32 (2·24), culmen 0·60–0·67 (0·64), width of bill at base 0·30, tarsus 0·67–0·68.—*Hab.* Southern Mexico (Vera Cruz) to Guatemala .... *E. albigularis.*

d^2. Lower tail-coverts white or very pale sulphur-yellow. Upper parts uniform brown, the wing-bands buffy; lower parts dull whitish, tinged with pale sulphur-yellow, the throat and lower tail-coverts more distinctly whitish; under wing-coverts and thighs deep dull buff. Wing 2·35–2·50 (2·42) inches, tail 2·30, culmen 0·59–0·60, width of bill at base 0·25, tarsus 0·55.—*Hab.* Paraguay and South-eastern Brazil .... *E. brunneus.*

c^2. Upper parts olive, olive-greenish, or greyish.

d^3. Lower parts not distinctly yellowish.

e^1. First quill shorter than ninth. Above deep olive, the hind neck more greyish, and top of head dull slaty; wing-bands very sharply defined, dull white or very pale olive-greyish, in conspicuous contrast with the blackish general colour of the wings; lower parts greyish white, shaded with dull greyish across breast, and tinged with pale sulphur-yellow. Wing 2·30–2·40 (2·37) inches, tail 2·30–2·40 (2·33), culmen 0·55–0·60 (0·58), width of bill at base 0·25–0·27 (0·26), tarsus 0·58–0·59.—*Hab.* Western Ecuador .... *E. griseipectus.*

e^2. First quill longer than seventh.

  f^1. First quill usually shorter than fifth; colour above olive or greyish brown, never distinctly greenish.

    g^1. Tail even, or very slightly rounded; wing averaging more than 2·60.

      h^1. Above olive, usually decidedly greyer on head; wing-bands in adult varying from dull brownish grey or greyish brown to nearly white; in young deep buff or ochraceous; lower parts white, tinged posteriorly with sulphur-yellow, and shaded on sides of breast with olive-greyish. *Male*: Wing 2·70–2·85 (2·75) inches, tail 2·35–2·60 (2·51), culmen 0·64–0·73 (0·69), width of bill at base 0·27–0·31 (0·29), tarsus 0·65–0·72 (0·68). *Female*: Wing 2·55–2·65 (2·60), tail 2·20–2·50 (2·38).—*Hab.* Western North America, north to Sitka and Fort Simpson, south (in winter) to Mexico .... *E. pusillus.*

      h^2. Similar to *E. pusillus*, but averaging more decidedly olivaceous above and more distinctly tinged with yellow beneath; the bill shorter and broader, and the tarsus shorter. *Male*: Wing 2·60–3·00 (2·81), inches, tail 2·40–2·60 (2·48), culmen 0·60–0·64 (0·62), width of bill at base 0·29–0·30 (0·30), tarsus 0·64–0·67 (0·66). *Female*: Wing 2·50–2·65 (2·58), tail 2·25–2·35 (2·30).—*Hab.* Eastern North America, south, in winter, through Middle America to northern South America .... *E. pusillus traillii.*

g^2. Tail slightly but decidedly emarginate; wing averaging less than 2·60.

Hardlydistinguishable in colour from *E. pusillus* and *E. traillii*, but wing-bands usually whiter. *Male*: Wing 2·30–2·60 (2·49) inches, tail 2·10–2·40 (2·30), culmen 0·53–0·59 (0·56), width of bill at base 0·23–0·27 (0·25), tarsus 3·59–0·68 (0·65). *Female*: Wing 2·20–2·40 (2·33), tail 2·10–2·25 (2·18).—*Hab.* Eastern North America, west to Rocky Mountains, breeding from northern United States northward, south, in winter, through Middle America to Panama *E. minimus.*

f^2. First quill usually equal to, or longer than, fifth; colour above uniform olive-green or greenish grey.

Wing-bands (all stages) buff or buffy whitish; lower parts white, more or less tinged with sulphur-yellow posteriorly, and (usually very faintly) shaded across breast with olive or greyish. *Nestling* with feathers of upper parts narrowly tipped with paler, producing a slightly mottled appearance. *Male*: Wing 2·75–3·10 (2·83) inches, tail 2·30–2·70 (2·49), culmen 0·62–0·69 (0·66), width of bill at base 0·28–0·30 (0·30), tarsus 0·59–0·67 (0·62). *Female*: Wing 2·55–2·70 (2·65), tail 2·25–2·35 (2·32).—*Hab.* Eastern U.S., south, in winter, through Western Cuba, Eastern Mexico, and Central America to Ecuador .... *E. acadicus.*

d^4. Lower parts distinctly yellowish.

f^1. Under wing-coverts pale buff, deepening into dull ochraceous on edge of wing.

Above dull greyish olive (more brownish in winter), the wing-bands dull light buffy greyish (more buffy in winter); lower parts dull pale yellowish, inclining to pale sulphur-yellow on belly and lower tail-coverts, and shaded with dull greyish brown across breast.

Male: Wing 2·50–2·90 (2·65) inches, tail 2·35–2·60 (2·43), culmen 0·57–0·63 (0·61), width of bill at base 0·25–0·28 (0·27), tarsus 0·64–69 (0·68). *Female*: Wing 2·30–2·60 (2·44), tail 2·20–2·45 (2·32).—*Hab.* Western North America, north to Sitka, south, in winter, to Western Mexico .... *E. difficilis.*

*f*². Under wing-coverts yellowish white or pale sulphur-yellow.

*g*¹. Wing-bands not darker (usually paler) than lower parts.

Above dull olive-green, the wing-bands pale olive-yellowish in adult, buffy in young; lower parts pale dull sulphur-yellow, shaded with olive across breast. *Male*: Wing 2·55–2·75 (2·64) inches, tail 2·10–2·30 (2·18), culmen 0·48–0·59 (0·54), width of bill at base 0·25–0·28 (0·26), tarsus 0·64–0·68 (0·66). *Female*: Wing 2·40–2·50 (2·45), tail 2·00–2·25 (2·11).—*Hab.* Eastern North America, south, in winter, through Eastern Mexico and Central America to Panama .... *E. flaviventris.*

*g*². Wing-bands darker than lower parts.

*h*¹. Above dull olive, the wing-bands dull light olive, sometimes inclining to russet: lower parts pale olive-yellowish, more decidedly olivaceous on breast; edge of wing dull ochraceous or fulvous. Wing 2·60–2·80 (2·72) inches, tail 2·40–2·55 (2·49), culmen 0·58–0·60 (0·59), width of bill at base 0·25, tarsus 0·65–0·70 (0·68).—*Hab.* Southern and Eastern Mexico (Oaxaca, Cordova, Mirador, &c.) .... *E. bairdii.*

*h*². Above bright olive or olive-green.

*i*¹. Above bright olive-green, the wing-bands similar but paler, sometimes inclining to ochraceous; lower parts greenish sulphur-yellow, distinctly shaded across breast and along sides with olive-green; edge of wing clear sulphur-yellow. Wing 2·50–2·90 (2·75) inches, tail 2·15–2·65 (2·44), culmen 0·60–0·63 (0·61), width of bill at base 0·28–0·30 (0·29), tarsus 0·68–0·72 (0·70).—*Hab.* Highlands of Guatemala . . *E. salvini.*

i^2. Above bright greenish olive (varying to tawny olive), the wing-bands more ochraceous; lower parts bright sulphur-yellow, faintly shaded across breast with tawny olive; edge of wing varying from light saffron-yellow to deep ochraceous buff. Wing 2·25–2·70 (2·48) inches, tail 2·05–2·40 (2·22), culmen 0·53–0·61 (0·59), width of bill at base 0·29–0·32 (0·30), tarsus 0·63–0·70 (0·65).—*Hab.* Costa Rica, Veragua, and Chiriqui . . . . *E. flavescens.*

a^2. Width of bill at nostrils less than half the length of the exposed culmen.

b^1. Outer web of outer tail-feather not abruptly paler than inner web: culmen 0·55 inch or less; tarsus less than 0·70.

Above olive, usually more greyish anteriorly, especially on hind neck; wing-bands dull light olive-greyish; lower parts varying from dull greyish white, faintly tinged posteriorly with sulphur-yellow, to decided olive-yellowish, the breast always strongly shaded with olive or olive-greyish, the throat never distinctly whitish. *Male*: Wing 2·60–2·80 (2·72) inches, tail 2·30–2·50 (2·38), culmen 0·53–0·59 (0·56), width of bill at base 0·22–0·24 (0·23), tarsus 0·60–0·68 (0·63). *Female*: Wing 2·45–2·75 (2·61), tail 2·15–2·40 (2·25).—*Hab.* Western North America, north to Lesser Slave Lake, south, in winter, to Southern Mexico . . . . *E. hammondi.*

b^2. Outer web of outer tail-feather abruptly paler than the inner web (usually distinctly dull whitish): culmen 0·58 inch or more; tarsus usually more than 0·70.

c^1. Colours otherwise much as in *E. hammondi*, and varying between the same or even greater extremes, but averaging somewhat greyer, with paler (often distinctly whitish) throat. *Male*: Wing 2·70–2·95 (2·83) inches, tail 2·55–2·80 (2·67), culmen 0·62–0·69 (0·65), width of bill at base 0·24–0·27 (0·26), tarsus 0·71–0·77 (0·74). *Female*: Wing 2·55–2·75 (2·64), tail 2·50–2·65 (2·52).—*Hab.* Western U. S., south, in winter, to Southern Mexico .... *E. obscurus.*

c^2. Deep brownish olive above, the wing-bands varying from olive to pale olive-greyish; lower parts dull yellow, shaded across breast with olive-brown. Wing 2·92–3·00 inches, tail 2·65–2·75, culmen 0·60, width of bill at base 0·22–0·25, tarsus (one specimen only) 0·68.—*Hab.* Southern Mexico (City of Mexico, Orizaba, &c.)........ *E. fulvipectus.*

XLIV.—*Ornithology in the Colonial and Indian Exhibition.*

By Howard Saunders.

It was hardly to be expected that Ornithology would be so well represented in this fourth Exhibition as it was in the first, when the collections made on the cruise of the 'Vega,' and those from the United States and Australia, formed such important features. India, indeed, might well be excused from sending anything, in view of the unrivalled Hume Collection lately presented to the British Museum; and several of our larger Colonies might consider that after what they had already done, anything further would be a vain repetition. Such, however, has not been the assumption, and consequently a display has been made in this department which has proved even more attractive to the public than were the exhibits on the former occasion, although the present series is necessarily somewhat inferior in scientific value.

The mounted birds in the Kuch-Behar tiger-hunting and jungle scene, daily visited by crowds of visitors, call for no special remark, the species being representative ones and consequently well-known. Mr. E. C. Buck exhibits three large cases of Indian Game Birds; and, hard by, the magnificent plates of Gould's 'Birds of Asia' are displayed on the walls. There are some cases of Assam birds, from Shillong; the Straits Settlements send some cases of mounted birds, and a number of skins arranged on the wall of one of the galleries, as well as some edible birds' nests—the latter being also a feature in the North Borneo exhibit. The Official Catalogue is particularly unsatisfactory as regards the exhibitions in the galleries, and it can only be surmised that two cases containing Argus Pheasants and other fine birds were contributed by Mr. Pryer; they have been mounted by Mr. E. Gerrard, jr. From Hong-Kong nothing could reasonably be expected. In the same gallery are specimens of the Ring-necked Pheasant, descendants of birds introduced into the Island of St. Helena in 1513, by some Portuguese exiled from Goa, which have varied very slightly from the plumage of their ancestors after the lapse of nearly four centuries. There is also a specimen, with its egg, of that remarkable little Plover, *Ægialitis sanctæ-helenæ*, the "Wire-bird" of that island, to which it appears to be confined, its representative on the African continent being *Æ. varia*. A paper by Mr. J. E. Harting, with figures of these two species, will be found in 'The Ibis' for 1873, pp. 260–269. The Mauritius section, in the same gallery, contains some natural-history specimens from the Seychelles, sent by Mr. H. Whatley Estridge, respecting which a note in the Official Catalogue says, "We notice also a small hawk, of which even the British Museum cannot boast a representative." The bird in question appears to be *Tinnunculus gracilis*; but, as a matter of fact, the British Museum has possessed two examples of it for some years past, one of them presented by Mr. E. Newton, C.M.G. Some bones of the Dodo are also exhibited.

Passing to Africa, the Cape Colony section contains a mounted group of Gannets, Penguins, and Cormorants, with their nests and eggs, from Ichaboe—virtually an advertisement of the guano found on that island. On the wall opposite is a collection of well-made skins, labelled with dates and localities, exhibited by Mr. W. Ayres, probably a son of our valued correspondent Mr. Thomas Ayres of Transvaal. In the

Natal section, on either side of the court, are cases of named and mounted birds; a group consisting of a pair of the handsome white-bellied *Circaëtus cinereus*, with a few smaller birds; and eight cases of well-prepared skins, exhibited, so far as can be gathered from the Catalogue, by the Natal Commission. From the Gold Coast there are two cases of mounted birds, and a fine nest of a species of *Euplectes*; while Gambia contributes an excellent collection of some 150 skins sent by Capt. Moloney, C.M.G., and determined by Capt. G. E. Shelley, thereby having acquired distinct scientific value.

The Australian colonies make a fine show: especially Queensland, which exhibits two large and attractive groups of birds and mammals, set up by Mr. Rowland Ward, also a case of skins; besides the large group at the end of the gallery, the feature of which is a Wedge-tailed Eagle carrying a young Wallaby to its brood. Victoria, in addition to a similar group, has a case of the little Blue Penguins (*Eudyptula*) and a collection of eggs. Western Australia exhibits a fine case of birds and mammals, mounted by Mr. E. Gerrard, jun.; while New South Wales is rich in New Guinea Paradise- and other birds. Some time after the opening of the Exhibition a collection of about 200 specimens was added by Mr. H. H. Romilly, H.M.'s High Commissioner for New Guinea. It is stated to have been obtained in the interior of New Guinea, above Port Moresby, and contains examples of several of Karl Hunstein's best discoveries, such as examples of females of *Paradisornis rudolphi* (*antea*, p. 252, pl. vii.) and males of *Amblyornis subalaris* (p. 257), showing the deep orange-red erectile crest. It is unfortunate that some of the best of these specimens have been spoilt by bad mounting.

In the New Zealand Court there are no less than 12 cases of birds mounted by Burton and Sons, and exhibited by Mr. S. W. Silver; but the scientific value of the collection is impaired by the introduction of several species which have no connection with New Zealand, such as a Brazilian Tanager, a Lyre-bird, and an Australian Thicknee. The Canterbury Museum, presided over by Professor Sir Julius von Haast, exhibits mounted skeletons of *Dinornis maximus*, *D. elephantopus*, and *D. didiformis*, also some bones of other extinct species, such as *Cnemiornis, Haptornis, Harpagornis*, and *Megalapteryx*. In the same case a fine collection of representative birds is labelled as exhibited by Mr. William Sparkes; there are also cases of Kakapo, Kaka, and Kea Parrots; and Mr. G. Fydell Rowley sends his celebrated Moa's egg, said to be unique. Altogether New Zealand makes a very fine show, not merely in ornithology but also in other branches of natural history. Fiji contributes an interesting group of mounted birds.

In the New World, Canada stands foremost with the fine collections exhibited by the Geological and Natural-History Surveying Department and by Mr. Hubbard, beneath his Rocky Mountain trophy, which no visitor can fail to notice. It contains, besides other objects of interest, three examples of what appears to be the Dwarf Snow-Goose (*Chen rossi*). Dr. Anderson of Quebec sends one small case of birds. British Guiana exhibits some mounted birds, a small collection of eggs, and a number of skins sent by Dr. C. G. Young. Santa Lucia, Grenada, and Tobago also contribute specimens of their avifauna, the last-named island exhibiting three attractive cases of nests, eggs, and parent birds. And with this I close the enumeration of the objects which I have been able to note, hoping that nothing of greater interest or rarity may still lurk unrecorded in some corner of the Exhibition.

10th July, 1886.

XLV.—*On a Collection of Birds from several little-known Islands of the West Indies.* By Charles B. Cory.

During the past winter (1885–6) an enterprising young collector, Mr. W. B. Richardson, has been visiting the West Indies. The ornithological results of his trip have been forwarded to me for identification and prove to be of much interest, including examples of three supposed new species (i.e. *Loxigilla barbadensis, Thryothorus guadeloupensis*, and

Loxigilla richardsoni, described in 'The Auk' for July, 1886, pp. 381–382), and of another species new to the Antilles.

Barbadoes.

Sixty-three skins were sent from Barbadoes, referable to twelve species, which were as follows:—

Dendrœca capitalis, Lawr.

Setophaga ruticilla (Linn.).

Certhiola barbadensis, Baird.

Vireo calidris (Linn.).

Loxigilla barbadensis, Cory.

Euetheia bicolor (Linn.).

Quiscalus fortirostris, Lawr.

Elainea martinica (Linn.).

Eulampis holosericeus (Linn.).

Bellona cristata (Linn.).

Columbigallina passerina (Linn.).

Ardea virescens (Linn.).

St. Vincent.

The lot from St. Vincent contained one hundred and seventy-five specimens of twenty-three species.

Merula nigrirostris (Lawr.).

Merula caribbæa (Lawr.).

This bird is allied to *M. gymnophthalma* (Cab.), from which I did not think it separable until I received the St. Vincent specimens. West-India birds seem to be more grey or ash-coloured, instead of brown; the bare skin round the eye is bright yellow in specimens from St. Vincent, and those from Grenada are probably the same.

Myiadestes sibilans, Lawr.

Cinclocerthia ruficauda (Gould).

Mimus gilvus (Vieill.).

Thryothorus musicus, Lawr.

Certhiola saccharina, Lawr.

Certhiola atrata, Lawr.

Vireo calidris (Linn.).

Calliste versicolor, Lawr.

This form is nearly allied to *C. cucullata,* but distinguished from it by several slight differences which appear to be constant.

Loxigilla noctis (Linn.).

Euetheia bicolor (Linn.).

Elainea martinica (Linn.).

Myiarchus oberi, Lawr.

Tyrannus rostratus, Sclater.

Chætura poliura (Temm.).

Three specimens of this interesting species were in the collection. I am not aware of any previous record of it from the West Indies.

Eulampis jugularis (Linn.).

Bellona cristata (Linn.).

Crotophaga ani (Linn.).

Coccygus minor (Gmel.).

Buteo latissimus (Wils.).

Urubitinga anthracina (Licht.).

Geotrygon montana (Linn.).

Marie Galante.

From this little-known island Mr. Richardson has forwarded sixty-seven skins of thirteen species of birds.

Dendrœca rufigula, Baird.

Dendrœca plumbea, Lawr.

Setophaga ruticilla (Linn.).

Certhiola dominicana (Taylor).

Vireo calidris (Linn.)

Loxigilla noctis (Linn.).

Euetheia bicolor (Linn.).

Elainea martinica (Linn.).

Quiscalus guadeloupensis, Lawr.

Eulampis holosericeus (Lawr.).

Bellona cristata (Linn.).

Falco sparverius caribbæarum (Gmel.).

Gallinula galeata (Licht.).

La Desirade.

This island, according to Mr. Richardson, is sparsely wooded, and birds are scarce; fifty-seven specimens of eleven species were procured here.

Margarops densirostris (Vieill.).

Margarops montanus (Vieill.).

Certhiola dominicana (Taylor).

Loxigilla noctis (Linn.).

Euetheia bicolor (Linn.).

Eulampis holosericeus (Linn.).

Bellona cristata (Linn.).

Falco sparverius caribbæarum (Gmel.).

Columbigallina passerina (Linn.).

Ardea virescens (Linn.).

Phaethon æthereus (Linn.).

Grand Terre.

This is but narrowly separated from Guadeloupe, and is practically the same island; the country is low. Mr. Richardson has sent seventy-six specimens representing fifteen species obtained here.

Cinclocerthia ruficauda (Gould).

Thryothorus guadeloupensis, Cory.

Dendrœca rufigula, Baird.

Dendrœca plumbea, Lawr.

Setophaga ruticilla (Linn.).

Certhiola dominicana (Taylor).

Vireo calidris (Linn.).

Saltator guadeloupensis, Lawr.

Elainea martinica (Linn.).

Tyrannus rostratus, Sclater.

Eulampis holosericeus (Linn.).

Eulampis jugularis (Linn.).

Bellona cristata (Linn.).

Geotrygon mystacea (Temm.).

Ardea virescens (Linn.).

Mr. Richardson stopped several days in St. Lucia, but collected nothing there, not being able to procure a permit to shoot birds from the authorities; but he purchased a number of skins from a native living in the interior of the island, and among them examples of a black *Loxigilla* already described ('Auk,' 1886, p. 382) as a supposed new species. The lot contained examples of ten species.

Myiadestes sanctæ-luciæ, Stejn.

Cinclocerthia macrorhyncha (Sclater).

Ramphocinclus brachyurus (Vieill.).

Dendrœca delicata (Ridgw.).

Leucopeza semperi, Sclater.

Certhiola martinicana, Reich.

Loxigilla richardsoni, Cory.

Euphonia flavifrons (Sparrm.).

Icterus laudabilis, Sclater.

Contopus latirostris, Verr.

XLVI.—*On a Collection of Birds from Fao, in the Persian Gulf.* By R. Bowdler Sharpe, F.L.S. &c. *With Notes by the Collector,* W. D. Cumming.

The British Museum has received during the past year a valuable series of birds from Mr. W. D. Cumming, who is stationed at Fao, and is a most energetic collector. The notes sent by him (which are enclosed in brackets) contain very instructive information on the migration of some of the species observed, while his account of the nesting of *Hypocolius* is an interesting record of a hitherto unknown fact.

1. CIRCUS MACRURUS (Gm.); Sharpe, Cat. B. Brit. Mus. i. p. 67 (1874); Blanf. East. Persia, ii. p. 110 (1876).

No. 58. An adult and a young male, the latter losing the brown immature plumage. [Shot in November 1884.]

No. 44. A male and female in immature plumage. [Shot in September 1884. Winter visitant.]

2. BUTEO DESERTORUM (Daud.); Sharpe, *t. c.* p. 179.

No. 103. One of the specimens sent is in the dark plumage of so-called *B. menetriesi.*

[Winter visitant. Shot on 9th and 10th September, 1884.]

3. NISAETUS PENNATUS (Gm.); Sharpe, *t. c.* p. 253.

Aquila pennata, Blanf. *t. c.* p. 112.

No. 99. A male and female in light plumage and one in the melanistic phase.

[Winter visitant. The black one was shot on the 9th of September, 1884, and the other two on the 23rd of the same month; they were seated together on an old mud fort.]

4. MILVUS KORSCHUN (Gm.); Sharpe, *t. c.* p. 322.

Milvus migrans, Blanf. *t. c.* p. 114.

No. 48. Two specimens.

[These Kites visit Fao frequently during the year, but do not remain longer than a couple of days at a time, roosting at night on the date-trees.

During the winter they are more frequently seen circling overhead.

From March to April large flocks migrate from S. to N.]

5. PERNIS APIVORUS (L.); Sharpe, *t. c.* p. 344.

No. 107. An example in uniform brown plumage.

[Winter visitant. Shot September 22, 1884.]

6. Falco subbuteo (L.); Sharpe, *t. c.* p. 395; Blanf. *t. c.* p. 105.

No. 98. An adult male and female and a young male.

[Winter visitant.]

7. Scops giu (L.); Sharpe, *op. cit.* ii. p. 47; Blanf. *t. c.* p. 115.

[Only three specimens shot, October 10, 1883, April 22, 1884, and one in October of the same year. Did not observe any others.]

8. Asio accipitrinus (Pall.); Sharpe, *t. c.* p. 234.

Otus brachyotus, Blanf. *t. c.* p. 116.

No. 39. An adult male and an immature male and female.

[Only three specimens secured, all in your possession.

The male in good plumage was shot on the morning of the 12th March; he rose from some lucerne whilst I was after Quail.

The two others were shot, one on the evening of the 17th, and the other on the morning of the 19th of September, about the same locality.]

9. Strix flammea, L.; Sharpe, *t. c.* p. 291.

[The only specimen, shot in February 1885.]

10. Corvus capellanus, Scl.; Sharpe, *op. cit.* iii. p. 32.

Mr. Cumming sends the nest and eggs of this Crow.

[Resident. Breeding from the 15th of February to the end of March.]

11. Oriolus galbula, L.; Sharpe, *t. c.* p. 191; Blanf. *t. c.* p. 219.

No. 91. Two specimens.

[Migratory. Passing north-westwards in May and June, and returning in September accompanied by young birds, when they stay for some days.]

12. Hypocolius ampelinus, Bp.; Sharpe, *t. c.* p. 316.

Up to the present time very little is known of this rare and curious bird. A few specimens have been recorded from N.E. Africa, and it appears to extend at least as far as the Niam-

Niam country, where it was met with by Signor Piaggia. Von Heuglin seems not to have come across the species in life; and beyond the fact that a specimen was in the British Museum from the White Nile, and three specimens collected by Botta were in the Leiden Museum, no other locality was known until Mr. Blanford received a specimen from Sind ('Ibis,' 1875, p. 387). Unfortunately no date of capture is given of the last-named example. A specimen obtained by Dr. O. T. Duke, on the 20th of April, at Nal in Kelat, is in the Hume Collection; it is apparently an adult female.

The male is properly described by Von Heuglin in his 'Ornithologie Nordost-Afrika's,' with the exception of the colour of the quills, which are said to be pure white at the ends, whereas, as Mr. Blanford has already pointed out, the outer primaries are shaded with brown at the ends.

My description of the adult male in the 'Catalogue' (vol. iii. p. 316) appears to be correct; but coming from Africa the specimen is doubtless in winter plumage, and the colours are not quite so clear as in the breeding-plumage—that is to say that the back is purer grey, the isabelline and black of the crown are both more intense, and the colours of the underparts also rather richer in the birds from Fao. The bill is yellowish with a horny brown tip, in the White-Nile bird; but whether this is an evidence of winter dress or is due to exposure to the light in our gallery, I cannot say for certain. In the breeding males the bill is jet-black.

The female in breeding-plumage differs from the male, as described by Von Heuglin, in wanting the black on the head and face, as well as on the wings, the primaries being brown to the ends, edged and fringed at the tips with greyish white; the tail-feathers ashy grey or drab, with narrow whitish tips, the feathers being subterminally blackish, but not to the same extent as in the male.

[Arriving from S.E. early in April. First individuals observed in 1884 were a small flock of six birds flying over telegraph buildings on the 10th of April. On the 11th my collector brought me a female that he had shot.

It is not till the middle of June that they breed.

In 1883, first eggs were brought by an Arab about the 13th of June, and on the 15th of the same month I found a nest containing two fresh eggs. In 1884, on the 14th of June, a nest was brought me containing four fresh eggs, and on the 15th I found a nest containing also four fresh eggs.

2nd July, I came across four young birds able to fly. On the 3rd, three nests were brought, one containing two fresh eggs, another three young just fledged, and the other four eggs slightly incubated. On the 9th another nest, containing four young just fledged, was brought. On the 15th I saw a flock of small birds well able to fly; on the 18th I found a nest containing four young about a couple of days old, and on the 20th a nest containing three eggs well incubated was brought from a place called "Goosba" on the opposite bank (Persian side) of the river.

The nests are generally placed on the leaves of the date-palm, at no very great height. The highest I have seen was built about ten feet from the ground, but from three to five feet is the average height.

They are substantial and cup-shaped, having a diameter of about 3¼ inches by 2¼ inches in depth, lined inside with fine grass, the soft fluff from the willow when in seed, wool, and sometimes hair.

The eggs are of a glossy leaden white, with leaden-coloured blotches and spots towards the larger end, sometimes forming a ring round the larger end, and at times spreading over the entire egg.

On rare occasions I have noticed a greenish tinge in very fresh eggs. This, I think, is due to the colour of the inner membrane, which is generally a very light green, in some very faint and in others more decided; this tinge seems to disappear after the egg is blown.

Very rough measurements are as follows:—0″·9 × 0″·63; 0″·83 × 0″·63; 0″·83 × 0″·6; 0″·83 × 0″·66; 0″·86 × 0″·66.

In 1883 I managed to rear a young bird, feeding it on bread steeped in water and lots of flies.

It used to fly about my room and the verandah, but always came to me when I showed it a fly. Unfortunately, one day I was rubbing up some brass hinges, and left them to steep in salad-oil into which a fly fell; the bird immediately seized and swallowed it, and in a few hours after got a fit, which recurred several times during the next two days, and on the third day it died.

I have known the old birds forsake a nest after it has been once examined, and even to stop building when it has been observed, and leave the locality altogether.]

13. Muscicapa grisola, L.; Sharpe, *op. cit.* iv. p. 151; Blanf. *t. c.* p. 143.

[No. 85, shot 10th May, 1884.

No. 90, shot 14th May, 1884. Apparently the only birds seen by me.]

14. Muscicapa parva, Bechst.; Sharpe, *op. cit.* iv. p. 161.

Erythrosterna parva, Blanf. *t. c.* p. 144.

No. 116, a young bird.

[Shot 10th October, 1884. Only bird observed.]

15. Pratincola rubetra (L.); Sharpe, *t. c.* p. 179; Blanf. *t. c.* p. 146.

[No. 81. Migratory; arriving in winter and staying till spring.

The one in your possession was shot in May 1884; one other I shot in November 1883.]

16. Pratincola hemprichii (Ehr.); Sharpe, *t. c.* p. 193; Blanf. *t. c.* p. 145.

No. 50. Two males and a female.

Although not showing quite so much white on the tail as Abyssinian specimens, all the examples sent by Mr. Cumming have the base of the tail conspicuously white.

[Winter visitant, shot in November and March.]

17. Sylvia nisoria (Bechst.); Seebohm, Cat. B. Brit. Mus. v. p. 6 (1881); Blanf. *t. c.* p. 174.

[No. 86. Shot in May; most probably found in spring and autumn.]

18. Sylvia cinerea, Bechst.; Seebohm, *t. c.* p. 8.

No. 67. One specimen.

[Migratory, arriving and leaving along with *S. atricapilla.*]

19. Sylvia atricapilla (L.); Seebohm, *t. c.* p. 23; Blanf. *t. c.* p. 174.

No. 66. Males and females sent.

[Abundant in the spring, frequenting mostly the mulberry-trees, which are in fruit at this time of the year (April and May). It again visits us in September and October, but is with difficulty discovered, owing to its skulking habits, and is quite mute. Shot in April and November.]

20. Phylloscopus trochilus (L.); Seebohm, *t. c.* p. 56.

No. 112. Three specimens.

[Autumn and spring visitor; shot on March 17th, and on September 26th, 1884.]

21. Phylloscopus tristis (L.); Seebohm, *t. c.* p. 63; Blanf. *t. c.* p. 180.

[No. 89. Migratory; shot in March and May.]

22. Phylloscopus rufus (Bechst.); Seebohm, *t. c.* p. 60.

[No. 42. Migratory; seen during March, April, and May.]

23. Hypolais obsoleta, Severtz.; Seebohm, *t. c.* p. 86.

This rare Warbler was not represented in the British Museum, and is a welcome addition to our collection.

[Only specimen secured, in November 1884.]

24. Acrocephalus phragmitis, Seebohm, *t. c.* p. 132.

[No. 77. I believe this bird to be a resident, for I have frequently seen it among the long grass that clothes both sides of the river near its mouth, whilst after other game. The one sent to the Museum was shot on the 1st of May, 1884, among some grass growing in a marsh just outside the telegraph compound.]

25. Acrocephalus turdoides (Meyer); Seebohm, *t. c.* p. 95.

Acrocephalus arundinaceus, Blanf. *t. c.* p. 195.

[No. 79. Seen during spring and autumn.]

26. Acrocephalus streperus (V.); Seebohm, *t. c.* p. 102; Blanf. *t. c.* p. 196.

A carbolized specimen.

27. Acrocephalus palustris (Bechst.); Seebohm, *t. c.* p. 101; Blanf. *t. c.* p. 197.

[No. 43. Migratory; seen in March and April. The one in your possession was shot on the 18th of March, 1884.]

28. Turdus musicus, L.; Seebohm, *t. c.* p. 191; Blanf. *t. c.* p. 156.

No. 46. An adult specimen.

[Migratory. Only one specimen, shot in March 1884.]

29. Erithacus philomela (Bechst.); Seebohm, *t. c.* p. 295.

No. 82. Three specimens.

[Arriving in autumn and staying till spring.

I have shot them in October and January, and one was found dead in a small date-tree on the 8th of May, 1884.]

30. Erithacus gutturalis (Guérin); Seebohm, *t. c.* p. 304.

No. 71. Male and female.

[Migratory; seen from March to June, generally in pairs.]

31. Erithacus cyaneculus (Wolf); Seebohm, *t. c.* p. 311.

No. 59. An adult male.

[Migratory, arriving in March; seen throughout April up to the middle of May. Generally in pairs.]

32. Monticola saxatilis (L.); Seebohm, *t. c.* p. 313; Blanf. *t. c.* p. 156.

No. 61. Adult male; No. 73. Adult female.

[Migratory, arriving in April and staying till May.

No. 61 was shot on the 2nd of April, 1884, at Dora, about twenty miles above Fao.

No. 73 was shot on the 25th of the same month at Fao.]

33. Ruticilla mesoleuca (H. & E.); Seebohm, *t. c.* p. 338.

No. 16. An adult male in breeding-plumage. This is a slightly more eastern locality for the species than any hitherto recorded.

[Migratory; seen during April, May, and June.]

34. SAXICOLA MORIO, H. & E.; Seebohm, *t. c.* p. 372; Blanf. *t. c.* p. 152.

No. 121. A male in nearly full plumage, and a second male in winter dress.

[Occurs from autumn to spring. The specimen sent was shot in October.]

35. SAXICOLA MŒSTA, Licht.; Seebohm, *t. c.* p. 382.

No. 36. An adult male. This is a more easterly locality than has hitherto been recorded for the species.

[Migratory. I have only observed these in August and September, and again in March and April.]

36. SAXICOLA DESERTI, Temm.; Seebohm, *t. c.* p. 383; Blanf. *t. c.* p. 148.

[No. 35. Winter visitant from August to May.]

37. SAXICOLA MELANOLEUCA (Güld.); Seebohm, *t. c.* p. 385; Blanf. *t. c.* p. 150.

No. 127. A male in full breeding-plumage.

[From autumn to spring.]

38. SAXICOLA ŒNANTHE (L.); Seebohm, *t. c.* p. 391; Blanf. *t. c.* p. 146.

[No. 70. Migratory. To be found singly or in pairs occasionally, during the months of September, October, up to the middle of November, and again in April and May.]

39. SAXICOLA ISABELLINA, Cretzschm.; Seebohm, *t. c.* p. 399; Blanf. *t. c.* p. 147.

No. 33. Two specimens.

[To be seen during autumn and winter and well into the spring. In summer an occasional bird is to be seen; but it is always rare, and only after a strong N.W. wind has been blowing for a few days.]

40. PYCNONOTUS LEUCOTIS (Gould); Sharpe, *op. cit.* vi. p. 136; Blanf. *t. c.* p. 218.

An adult bird. Eggs sent.

[Resident. Breeding in May and June, and laying from three to four eggs.]

41. Burnesia lepida (Blyth); Sharpe, *op. cit.* vii. p. 211.

A very pale grey specimen with the narrow stripings of *B. lepida*, but much more ashy than any specimen in the British Museum.

[Resident. Plentiful among the small bushes.

Breeds from April to June, laying from five to six eggs.]

42. Argya huttoni (Blyth); Sharpe, *t. c.* p. 394.

Crateropus huttoni, Blanf. *t. c.* p. 203, pl. xiii.

Three specimens. They are much paler than typical *A. huttoni*, and much less plainly streaked, besides being smaller in size.

[Resident. Very plentiful; breeding throughout April and May to the middle of June. The usual number of eggs is three. On the 19th of June, 1884, I took a nest containing three fresh eggs. This is of rare occurrence, for by this time most nests contain young, and many young are seen flying about the bushes attended by the parent birds.]

43. Lanius minor, Gm.; Gadow, Cat. B. Brit. Mus. vol. viii. p. 235; Blanf. *t. c.* p. 137.

No. 75. An adult and a young bird.

[Seen from March to May, and again in August and September.

Both those sent to the Museum were shot on the 1st of September, 1884.]

44. Lanius fallax, Finsch; Gadow, *t. c.* p. 247, pl. viii.

Seems to me to come nearest to a specimen from Mesopotamia, obtained by Commander Jones, and determined by Dr. Gadow to be *L. fallax*. Of the validity of some of the species of *Lanius* admitted by the last-named author I have the highest doubts.

[The only specimen, secured by me in September 1884, unless one supplied to the Karachi Museum in the early part of the year, but not identified by Mr. Murray, is of the same species.]

45. Lanius phœnicuroides, Severtz.; Gadow, *t. c.* p. 278.

No. 122. Adult male; No. 72. Adult female.

Occurs from September to May.

No. 72 was shot on the 17th of April, and No. 122 on the 12th of October, 1884.

46. Lanius nubicus, Licht.; Gadow, *t. c.* p. 282.

No. 69. Two adult birds.

[Migratory; only seen in March and April, generally in pairs.]

47. Lanius auriculatus, Müll.; Gadow, *t. c.* p. 283; Blanf. *t. c.* p. 138.

No. 56. An adult specimen.

[Seasonal visitant in spring and autumn. Probably breeds beyond Busreh.]

48. Lanius collurio, L.; Gadow, *t. c.* p. 286; Blanf. *t. c.* p. 137.

No. 83. Two males, one female, and a young bird.

[Excepting during the months of December, January, and February, and from June to August, *i. e.* midwinter (rainy season) and midsummer, I have seen them throughout the year.

I have shot them on the 5th of May, 1884, in adolescent stage of plumage, on the 1st and again on the 30th of September, two young, one adult; one adult on the 15th of November.]

49. Cotile riparia (L.); Sharpe, *op. cit.* x. p. 96; Blanf. *t. c.* p. 216.

[No. 92. Excepting during December and January this bird is noted by me as being seen throughout the remainder of the year.]

50. Hirundo rustica, L.; Sharpe, *t. c.* p. 128; Blanf. *t. c.* p. 215.

Two specimens in full plumage.

[I believe these birds only leave Fao during midwinter, *i. e.* in December and January.

Breeds in the huts and telegraph buildings in March and April, and lays as many as six eggs.]

51. Motacilla alba, L.; Sharpe, *t. c.* p. 464; Blanf. *t. c.* p. 232.

No. 10. A young bird in winter plumage.

[Begins to arrive in October and remains till end of April. Occasionally, but very rarely, I observed a stray bird in the early part of May 1884.]

52. Motacilla flava, L.; Sharpe, *t. c.* p. 516, pl. vi. figs. 3–5.

Budytes flavus, Blanf. *t. c.* p. 233.

No. 34. Two adult males. Three autumn-plumaged birds marked 113, 34 a, 34 b.

[To be seen from September to May. In September, October, April, and May in large flocks. The rest of the time small flocks occur here and there, but it is more often in pairs. Not so common as *M. alba*.]

53. Motacilla feldeggi, Michahelles; Sharpe, *t. c.* p. 527, pl. viii. figs. 1–4.

No. 55. A male in full plumage.

[Migratory, appearing and leaving same time as *M. flava*.]

54. Anthus trivialis (L.); Sharpe, *t. c.* p. 543; Blanf. *t. c.* p. 235.

[No. 65. Migratory. To be found probably in spring and autumn.

The one sent to the Museum was shot on the 12th of April.]

55. Passer flavicollis.

Gymnorhis flavicollis (Frankl.); Blanf. *t. c.* p. 256.

[Arriving in April; breeding after the 15th of May. By July all nests contain young. Begins to leave again towards end of August; by end of September only a stray bird is to be seen. Nests in holes in the date-trees, laying from five to six eggs.]

56. Emberiza hortulana, L.; Blanf. *t. c.* p. 259.

[No. 87. Migratory in spring and autumn.]

57. Emberiza luteola (Sparrm.); Hume, Str. F. 1879, p. 107.

No. 88. An immature bird. This species is not mentioned by Blanford. Unfortunately, Mr. Cumming has no note of the specimen.

58. Galerita cristata (L.); Blanf. *t. c.* p. 240.

[No. 22. Resident. Though great numbers migrate away in April, still here and there they are to be found in pairs, and from their habits apparently breeding; yet I have not been fortunate enough to discover their nests, though I have searched very closely; neither could I gain any information from the Arabs whether a nest had been seen or eggs found. By August they are all back again, accompanied by young birds.]

59. Caprimulgus europæus, L.; Blanf. *t. c.* p. 127.

[No. 84. From autumn to spring. An odd one here and there seen in June 1884.]

60. Cypselus pallidus, Shelley; Dresser, B. Eur. iv. p. 597, pl. 268.

No. 81. Two specimens, agreeing with Egyptian ones.

[Migratory. I have only seen three specimens, out of which I shot the two sent to the Museum in March 1884. All were seen singly.]

61. Merops apiaster.

Merops apiaster, L.; Blanf. *t. c.* p. 122.

[No. 63. Migratory, arriving and leaving at the same time as *M. ægyptius*.]

62. Merops ægyptius, Forst.; Blanf. *t. c.* p. 123.

[No. 49. Migratory. In April and May large flocks are to be seen migrating north-westward of the right bank of the river (Fao side), apparently from Arabia. They return in July and August, roosting at Fao for a short time. Each pair is accompanied by their young at this time.

Supposed to breed about Busreh.]

63. CORACIAS GARRULA, L.; Blanf. *t. c.* p. 125.

[No. 29. Migratory, passing over in large flocks from S.E. to N.W. in May. An occasional bird roosts here at this time. In September and October they return, but in very small numbers, and stay for a short while.

The Arabs say they breed about thirty miles up the river, in holes in the date-trees; but though I have offered high rewards for their eggs, I have not been able to get any.]

64. CORACIAS INDICA, L.; Blanf. *t. c.* p. 126.

[No. 29 (*sic*). Migratory.

Only two specimens seen and shot—one on the Persian side of the river, and the other (sent to the Museum) at Fao, on an old fort a short distance from the telegraph buildings.]

65. ALCEDO BENGALENSIS, Gm.; Blanf. *t. c.* p. 121.

[No. 1. A young bird, which I believe to belong to *A. bengalensis* rather than to *A. ispida.* I was not careful enough, apparently, in noticing the difference between this bird and the specimen I supplied to the Karachi Museum, which has been identified by Mr. Murray as "*Alcedo ispida.*" Probably both arrive and stay the same time, *i. e.* from August to April.

In 1883 the first bird was seen on the 4th of August; after this, up to April 1884, I saw several of these small Kingfishers perched on the willow and other trees overhanging the creeks. I have no note of having seen them later than April. In 1884 the first observed was on the 11th of August.]

66. HALCYON SMYRNENSIS (L.); Blanf. *t. c.* p. 121.

No. 2. Arriving and leaving about same time as *Alcedo bengalensis.*

[First bird observed in 1883 was on the 2nd of August, and the last noted was on the 4th of April, 1884; from this time up to the 30th of July I have no note of having observed any. On the 30th of July I heard the bird, and saw one the following day. It breeds, I believe, above Busreh. I have shot young birds in August.]

67. Cuculus canorus, L.; Blanf. *t. c.* p. 119.

No. 119. A young bird.

[This single bird was shot by me on the 10th of October, 1884. I frequently thought I had seen Cuckoos flying in amongst the date-trees during early morning and about sunset, but was unable to secure any other specimen, though I tried hard. Never heard any note.]

68. Turtur auritus, Gray; Blanf. *t. c.* p. 270.

Three specimens.

[Arrives in March, leaving in September. Breeds in May and June, laying two eggs.]

69. Coturnix coturnix (L.).

Coturnix communis, Blanf. *t. c.* p. 278.

A female.

[Arrives in April, leaving in November. Scarce in June and July.]

70. Gallinula chloropus (L.); Blanf. *t. c.* p. 288.

[Winter visitant from October to March.]

71. Fulica atra, L.; Blanf. *t. c.* p. 289.

[No. 6. Have observed the Coot from October up to March. I shot a single specimen in May 1884. This was the only bird I saw during the two months March and April. It was in very poor condition, and, probably owing to its weak state, the bird was unable to continue its flight, and rested, with intent to move forward after a day or so; but chance brought it across my path, and I nipped its intentions in the bud.]

72. Porzana porzana (L.).

Porzana maruetta, Dresser, B. Eur. vii. p. 267, pl. 496.

[No. 118. Resident, from the autumn to spring.]

73. Porzana bailloni (V.); Dresser, *t. c.* p. 275, pl. 497.

[No. 120. Shot in October. Occurs from autumn to spring.]

74. Crex crex (L.).

Crex pratensis, Blanf. *t. c.* p. 288.

[The Corn-Crake arrives in April. A stray bird is to be met with in June and July. They begin to increase in numbers from August, but lessen again towards mid November. By the commencement of December they appear to have all gone.]

75. Ardea cinerea, L.; Blanf. *t. c.* p. 295.

[Resident, breeding near Abdulla Bank.]

76. Ardea purpurea, L.; Blanf. *t. c.* p. 295.

No. 41. Two young specimens.

[Resident, breeding in March and April near Abdulla Bank.]

77. Ardetta minuta (L.); Blanf. *t. c.* p. 296.

[No. 93. I cannot say I have seen this bird often, as it is very shy, but have heard its call throughout spring and summer immediately after sunset. The one sent to the Museum was caught alive in an old watercourse, where it was hiding in a hole on one side of the embankment.]

78. Demiegretta gularis, Bosc; Hume, Str. F. 1879, p. 114.

No. 11. An adult in worn grey plumage, and a second specimen in white plumage with remains of ashy feathers.

79. Demiegretta asha.

[No. 11. Permanent resident.

In young birds the plumage is white, beginning to change about the fifth month, and by the eighth month they have completed their ashy plumage.

In April 1884, out of a consignment of eggs of *D. asha* brought from the Korseit side, there were several hatched in the boxes in which they were packed; from these I took half a dozen to try and bring up by hand. With great trouble I succeeded with three, feeding them with finely chopped mudfish (*Gobius viridipunctatus* and *G. polynema*). They became quite domesticated, and would fly all about the place, returning three times a day regularly for their meals. It was quite amusing to watch their return from their rambles, seldom arriving together; those first home always appeared glad when the later ones arrived, advancing to meet them at a half flying run with open wings, cawing a sort of welcome, and when they met there would be a deal of bowing and scraping and a little dance, partaken in by the new arrivals; then they would run off to their roosting-place, where a second performance would be gone through by the whole company, a sort of "all hands round"!

They all came to an unfortunate end. The Arabs consider these birds a great delicacy as an article of food, and unfortunately all my birds one after the other fell victims to the Arab sportsman. As each was shot, the rest appeared to mourn their loss greatly; for all through the night at intervals they would give a single caw, repeated on each occasion four or five times. The next day they refused their food till late in the day and kept in the vicinity of the telegraph buildings for two or three days, after which they gained confidence and went out on their former excursions. All met the same fate.]

80. HERODIAS GARZETTA (L.); Blanf. *t. c.* p. 296.

[No. 110. Resident. Supposed to breed near Abdulla Bank.]

81. ARDEA COMATA, Pall.

Ardea ralloides, Dresser, B. Eur. vi. p. 251.

[No. 32. Resident. Supposed to breed in same localities as *Demiegretta gularis*.]

82. BUBULCUS IBIS, Bp.

Ardea ibis, Blanf. *t. c.* p. 296.

[No. 60. Resident. Supposed to breed in the same localities as *Demiegretta gularis*.]

83. NYCTICORAX GRISEUS (L.); Blanf. *t. c.* p. 296.

[Nos. 18, 20. Arriving in October and leaving in May. One or two large flocks frequent the same clump of date-trees yearly.]

84. Glareola pratincola (L.); Blanf. *t. c.* p. 282.

No. 78. Three specimens, an adult and two young.

[Migratory. The adult was shot on the 24th of April, and the two young birds on September 3rd, 1884. The only specimens seen.]

85. Ægialitis dubia (Scop.).

Ægialitis curonica, Dresser, B. Eur. vii. p. 491, pl. 524.

[No. 47. One specimen. Only two birds observed, one of which was shot by my brother on the 19th of March, when he was staying with me at Fao for a couple of months. I think they must be more common; but I have not noticed any others.]

86. Charadrius geoffroyi, Wagl.

Ægialitis geoffroyi, Dresser, *t. c.* p. 475, pl. 521.

[No. 62. One specimen. Winter visitant. The one sent to you was shot on the 9th of March, 1884.]

87. Totanus canescens (Gm.); Dresser, B. Eur. viii. p. 173, pl. 570.

[No. 104. Winter visitant.]

88. Totanus calidris (L.); Blanf. *t. c.* p. 285.

Nos. 114, 116.

[Winter visitant. Shot in November and December.]

89. Terekia cinerea (Güld.); Blanf. *t. c.* p. 283.

[No. 115. Winter visitant. One specimen; shot on the 11th of September, 1884.]

90. Numenius phæopus (L.); Blanf. *t. c.* p. 286.

Winter visitant.

[No. 80. Arriving in July and leaving in March.]

91. Numenius arquata (L.).

[No. 96. The same as the preceding.]

92. Gallinago major (Gm.); Blanf. *t. c.* p. 282.

No. 74. Two specimens.

[Migratory. Seen only in April 1884.]

93. Hydrochelidon hybrida (Pall.); Blanf. *t. c.* p. 294.

No. 105. In winter plumage.

[Resident throughout the year.]

94. Sterna saundersi, Hume, Str. F. 1877, p. 326.

No. 52. An adult and an immature skin, both bearing out the characters given by Mr. Hume for the species.

[Resident, breeding near Abdulla Bank, Turkish Arabia.]

95. Sterna anglica, Mont.; Dresser, B. Eur. viii. p. 295, pl. 585.

[No. 13. Resident. Breeding in the vicinity, on both the Persian and Turkish sides.]

96. Spatula clypeata (L.); Blanf. *t. c.* p. 301.

[No. 97. Winter visitant, arriving in September and leaving in March. The one sent to the Museum was obtained during the current year by my collector, at Fao.]

97. Querquedula circia (L.); Blanf. *t. c.* p. 301.

[Nos. 40, 101. Winter visitant, from September to March.

No. 40, shot on the 13th of March, 1884.

No. 101, on the 15th of September, 1884.]

98. Podiceps minor (Gm.); Blanf. *t. c.* p. 304.

[Arrives in September, leaving in February.]

99. Podiceps cristatus (L.); Blanf. *t. c.* p. 304.

[No. 117. Winter visitant. The only bird shot by me was procured on the 21st of October, 1884.

I believe I saw a Grebe just off the mouth of the river in January, 1884, when paying a visit to the Pelicans' nests.]

XLVII.—*On a Collection of Birds from Bushire, in the Persian Gulf.* By R. Bowdler Sharpe, F.L.S., F.Z.S., &c., Zoological Department, British Museum.

Following closely on the interesting collections sent by Mr. Cumming, as recorded in the foregoing paper, the Museum has received a valuable consignment from Mr. A. J. V. Palmer, from Bushire. Most of the species are recorded by Mr. Blanford, but *Hypocolius ampelinus* and *Emberiza cinerea* are not mentioned by him. The list of the specimens should be compared with that of Mr. Cumming's collection.

1. CIRCUS MACRURUS (Gm.); Sharpe, Cat. B. Brit. Mus. i. p. 67; Blanf. East. Persia, ii. p. 110.

Two specimens. Bushire, April 1885. One is a male in full plumage.

2. CERCHNEIS TINNUNCULUS (L.); Sharpe, *t. c.* i. p. 425. *Tinnunculus alaudarius*, Blanf. *t. c.* p. 105.

Bushire, March 1885. An interesting specimen, in full change to the adult plumage of the male.

3. SCOPS GIU, Scop.; Sharpe, Cat. B. ii. p. 47; Blanf. *t. c.* p. 115.

Three specimens. Bushire, March 1885. One female was shot among some broken cliffs on the seashore.

4. ORIOLUS GALBULA, L.; Blanf. *t. c.* p. 219.

Male and female. Bushire, April 1885. Shot in row of date-trees.

5. HYPOCOLIUS AMPELINUS, Bp.; Sharpe, Cat. B. iii. p. 316.

Male. Bushire, April 20, 1885.

This species was not met with by Mr. Blanford during his travels in Persia.

6. MUSCICAPA GRISOLA, L.; Blanf. *t. c.* p. 143.

An adult male. Bushire, April 12, 1885. Shot in open field.

7. MUSCICAPA ATRICAPILLA, L.; Blanf. *t. c.* p. 143.

An adult male. Bushire, April 1885. Shot in a garden.

8. PRATINCOLA HEMPRICHI (Ehr.); Blanf. *t. c.* p. 145.

a, b. ♂ ♀ ad. Bushire, March 7, 1885. Shot near old wall on castor-oil tree.

c. ♀ ad. Bushire, March 28, 1885. Shot on grape-vine.

9. Sylvia atricapilla, L.; Blanf. *t. c.* p. 174.

♂. Bushire, April 1885. Shot in hedge round grapevine.

10. Sylvia curruca (L.); Blanf. *t. c.* p. 175.

Adult. Bushire, April 1885.

11. Sylvia affinis, Blyth; Blanf. *t. c.* p. 176.

An adult specimen, of which the label has been lost. Mr. Blanford mentions a specimen which he obtained in Persia as being probably of this species, and there is now no doubt of its occurrence in Southern Persia.

12. Sylvia familiaris, Ménétr.; Seebohm, Cat. B. v. p. 36.

Aedon familiaris, Blanf. *t. c.* p. 210.

Bushire, April 1885.

A male and female were obtained, with nests and eggs.

13. Phylloscopus rufus, Bechst.; Seebohm, *op. cit.* v. p. 60.

Phylloscopus collybita, V.; Blanf. *t. c.* p. 181.

Adult. Bushire (no date).

Mr. Seebohm has examined this specimen and considers it to be true *P. rufus.*

14. Turdus musicus, L.; Blanf. *t. c.* p. 156.

a. ♀ ad. Bushire, Jan. 23, 1885.

b. ♀ ad. Bushire, Feb. 16, 1885.

15. Turdus atrigularis, Temm.; Blanf. *t. c.* p. 158.

Two females. Bushire, Feb. 16, 1885.

Adult female. Bushire, March 2, 1885.

One of the February specimens shows a good deal of the black on the throat, while in the March specimens the full plumage is nearly assumed.

16. Erithacus gutturalis (Guér.); Seebohm, *op. cit.* v. p. 304.

Cossypha (*Irania*) *gutturalis,* Blanf. *t. c.* p. 161.

An adult male. Bushire, April 1, 1885. Shot in garden.

17. Erithacus cyanecula (Wolf); Seebohm, *op. cit.* v. p. 311.

? *Cyanecula wolfi*, Blanf. *t. c.* p. 169.

An adult male. Bushire, March 28, 1885.

Mr. Blanford did not obtain this species, and Mr. Dresser was inclined to doubt its occurrence in Persia.

18. Ruticilla phœnicura (L.); Blanf. *t. c.* p. 163.

a. ♂ ad. Bushire, Feb. 25, 1885.
b, c. ♀ ad. Bushire, March 5, 1885.
d. ♂ ad. Bushire, April 18, 1885.

This species is now satisfactorily recognized as from Southern Persia. Mr. Blanford doubtfully identified a female specimen from Shiraz as belonging to the Common Redstart (*l. c.*), but Mr. Palmer has now sent me two pairs.

19. Ruticilla erythronota (Eversm.); Blanf. *t. c.* p. 167.

A male. Bushire, Jan. 27, 1885.

20. Monticola cyanus (L.); Blanf. *t. c.* p. 155.

a. ♂ ad. Bushire, March 9, 1885. Shot on wall of old ruin near a village.
b. ♀ ad. Bushire, March 16, 1885. Shot in ravines.
c. ♀ ad. Shot in garden, April 1, 1885.

21. Monticola saxatilis (L.); Blanf. *t. c.* p. 156.

An adult male. Bushire, March 25, 1865. Shot near an old grape-vine.

22. Saxicola isabellina, Rüpp.; Blanf. *t. c.* p. 147.

One specimen. Bushire (no date).

23. Saxicola deserti, Rüpp.; Blanf. *t. c.* p. 148.

A male. Bushire, March 16, 1885.

24. Saxicola morio, H. & E.; Blanf. *t. c.* p. 152.

Males. Bushire, March 13 and 26, 1885.

25. Burnesia lepida (Blyth); Sharpe, *op. cit.* x. p. 211.

Drymœca gracilis, Blanf. *t. c.* p. 206.

Male. Bushire, Feb. 6, 1885.

Agrees with the Persian specimens collected by Mr. Blanford, and not with the true *B. gracilis* of Palestine.

26. Lanius collurio, L.; Blanf. *t. c.* p. 137.

a. ♂ specimen. Bushire, April 20, 1885.

27. Lanius auriculatus, Müll.; Blanf. *t. c.* p. 138.

An adult bird. Bushire April, 1885.

28. Hirundo rustica, L.; Sharpe, *op. cit.* x. p. 128; Blanf. *t. c.* p. 215.

Bushire (no date). "Two specimens with eggs."

29. Hirundo rufula, Temm.; Sharpe, *op. cit.* x. p. 128; Blanf. *t. c.* p. 215.

Two specimens. Bushire (no date). "With eggs."

30. Motacilla alba, L.; Sharpe, *op. cit.* x. p. 457; Blanf. *t. c.* p. 232.

Male and female. Bushire, Feb. 1885.

31. Motacilla flava, L.; Sharpe, *op. cit.* x. p. 516; Blanf. *t. c.* p. 233.

Two males. Bushire, April 4, 1885. Shot in corn-field. Adult birds of the ordinary form (*cf.* Sharpe, *t. c.* p. 680).

32. Anthus campestris (L.); Blanf. *t. c.* p. 237.

Male. Bushire, March 1885.

33. Alauda arvensis, L.; Blanf. *t. c.* p. 239.

Female. Bushire, Jan. 27, 1885.

The eastern pale form, which is found in Palestine.

34. Melanocorypha bimaculata (Ménétr.); Blanf. *t. c.* p. 244.

Female. Bushire, Jan. 27, 1885.

35. Gymnorhis flavicollis (Frankl.); Blanf. *t. c.* p. 256.

Male and female. Bushire, April 1885.

36. Emberiza miliaria, L.; Blanf. *t. c.* p. 257.

Two males. Bushire, Feb. 25, 1885.—Male. Bushire, March 2, 1885.

All three specimens belong to the paler eastern form which is found in Persia.

37. Emberiza cinerea, Strickl.

Female. Bushire, March 27, 1885.

Apparently a young female of the previous year, as the whole under surface is pale yellow, with blackish spots on the throat. New to Persia.

38. Emberiza hortulana, L.; Blanf. *t. c.* p. 259.
Male. Bushire, April 10, 1885.

39. Emberiza melanocephala (Scop.); Blanf. *t. c.* p. 260.
Two males. Bushire, April 14, 1885. Shot on hedge in corn-field.

40. Cypselus apus (L.); Blanf. *t. c.* p. 129.
One specimen. Bushire (no date given).

41. Merops ægyptius, Forsk.; Blanf. *t. c.* p. 123.
Two males. Bushire, April 13 and 18, 1885.

42. Merops apiaster, L.; Blanf. *t. c.* p. 122.
One specimen. Bushire, April 13, 1885.

43. Coracias garrula, L.; Blanf. *t. c.* p. 125.
One specimen. Bushire, April 2, 1885. Shot off a cotton-bush in the open field.

44. Upupa epops, L.; Blanf. *t. c.* p. 130.
Male. Bushire, Feb. 19, 1885.—Female. Bushire, March 6, 1885.

45. Cuculus canorus, L.; Blanf. *t. c.* p. 119.
Several specimens. Bushire, April 1885.
a. Male. April 16. Shot in cotton-bushes.
b. Male. April 16. Shot among the date-trees.

46. Ammoperdix bonhami (Gray); Blanf. *t. c.* p. 275.
Male. Bushire, Jan. 27, 1885.—Female. Bushire, Feb. 13, 1885.

47. Caccabis chukar, Gray; Blanf. *t. c.* p. 275.
Male. Bushire, Feb. 10, 1885.

48. Gallinula chloropus, L.; Blanf. *t. c.* p. 288.
One specimen. Bushire, April 1885.

49. Ardea purpurea, L.; Blanf. *t. c.* p. 295.
Adult. Bushire, 1885.

50. Ardea minuta, L.; Blanf. *t. c.* p. 296.

Adult. Bushire, March 16, 1885.—Adult female. Bushire, April 1885.

51. Ardea comata, Pall.; Blanf. *t. c.* p. 296, note to *A. gularis*.

Two specimens. Bushire, April 1885.

52. Nycticorax griseus (L.); Blanf. *t. c.* p. 296.

Female. Bushire, April 24, 1885.

53. Podiceps cristatus, L.; Blanf. *t. c.* p. 304.

Female. Bushire, January 1885.

XLVIII.—*A List of the Birds obtained by Mr. Henry Whitely in British Guiana.* By Osbert Salvin, M.A., F.R.S., &c.

(Plate XII.)

[Continued from p. 181, and concluded.]

Since the last portion of this paper was published (*antea*, p. 181), Mr. Whitely has again returned to England, after a stay of about twelve months on the Carimang River, during which time he made another extensive collection of bird-skins, and having brought them home with him, he has submitted them to us for examination.

Mr. Whitely's collecting-ground was in the vicinity of a loop of the river indicated in his Map published by the Royal Geographical Society in 1884 (Proc. R. G. S. 1884, p. 488), as lying a little to the westward of 61° W. long., and elevated about 1500 feet above the sea. From this point he ascended a mountain on the southern side of the river, having precipitous sides like those of Roraima, but of considerably less elevation than the far-famed mountains. Its features Mr. Whitely describes as follows:—"Twek-quay, as the mountain is called, is similar to Roraima, and is situated about 50 miles distant from it, in a N.N.W. direction, on the southern bank of the Carimang River, below the junction of the Aruima. The mountain is not so high as

Roraima, but is of similar form, flat-topped, with vertical walls, and with a long sloping talus from the foot of the walls to the savanna country below. It differs from Roraima in being wooded at the summit and in the foot-slope at one part giving a comparatively easy access to the top. A further difference is in the drainage of the summit. On Roraima the water falls over the edge of the plateau, forming magnificent cascades in the rainy season. On Twek-quay there are no waterfalls, and the water drains off by a cavity of great depth in the middle of the plateau." (Proc. R. G. S. 1886, p. 453.)

Though of much lower elevation than the forests of the slopes of Roraima, the woods of the summit of Twek-quay have yielded many, if not most, of the upland species of birds hitherto only known from Roraima. We thus find in the present collection *Turdus roraimæ, Microcerculus ustulatus, Basileuterus roraimæ, Setophaga castaneocapilla, Hylophilus sclateri, Calliste whitleyi, Myiobius roraimæ, Chloropipo uniformis, Lathria streptophora, Pipreola whitelyi, Synallaxis adusta,* and *Aulacorhamphus whitelyanus.*

It is evident from this list that the bird-fauna of this mountain is but an extension of that of Roraima, as, indeed, a glance at the map would lead us to expect, it being a portion of the same mountain system. The rest of the collection obtained on the lower grounds consists mainly of specimens of species already recorded in the preceding list. The additions are as follows :—

1. EUCOMETIS OLEAGINEA, sp. n.

♀. Oleaginea; fronte, capitis lateribus et gula cinereis; corpore subtus medialiter aurantiaco-oleagineo; alis nigricanti-fuscis; remigibus cinereo, secundariis oleagineo extus limbatis; cauda nigricanti-fusca; rostro corneo, mandibula ad apicem paullo pallidiore; pedibus plumbeis. Long. tota 7·75, alæ 3·5, caudæ rectr. med. 3·5, rectr. lat. 3·0, tarsi 1·1, rostri a rictu 0·8.

Hab. Twek-quay Mountain, Carimang River, British Guiana (*Whitely*).

Obs. E. cassini affinis, sed rostro robusto, dorso toto oleagineo nec fusco-nigricante, alis extus oleagineis &c. facile distinguenda.

Of this species Mr. Whitely unfortunately obtained only a female specimen, so that I am unable to say whether the male exhibits brighter colours. It is quite distinct from any species known to me, but apparently allied to *E. cassini*—itself an aberrant species of *Eucometis* (*cf.* Biol. Centr.-Am., Aves, i. p. 307). If I am right in my conjecture as to the affinities of *E. oleaginea,* the sexes would not differ materially in coloration.

2. Rhynchocyclus megacephalus (Sw.).

Tyrannula megacephala, Sw. Orn. Draw. pl. 47.

Rhynchocyclus megacephalus, Scl. Cat. Am. B. p. 221.

Carimang River.

These specimens agree with others from Pebas in the Amazons valley, which stand in our collection under this name (*cf.* Scl. & Salv. P. Z. S. 1867, p. 978; 1873, p. 280).

3. Pionus violaceus (Bodd.).

Pionus violaceus, Scl. Cat. Am. B. p. 355.

Carimang River. Many specimens.

4. Micrastur mirandollii (Schl.).

Micrastur mirandollii, Scl. & Salv. P. Z. S. 1869, p. 365 Sharpe, Cat. B. Brit. Mus. i. p. 76.

Carimang River.

A species originally described from a Guiana specimen, and since traced to the Amazons valley and the State of Panama.

5. Accipiter tinus (Lath.).

Accipiter tinus, Gray, Gen. B. i. pl. 10; Sharpe, Cat. B. Brit. Mus. i. p. 139.

Carimang River.

6. Ardetta exilis (Gm.).

Ardetta exilis, Baird, Brew., & Ridgw. Water B. N. Am. i. p. 72.

Carimang River.

A well-known North-American species, also found in Brazil.

Besides the species just mentioned Mr. Whitely obtained several pairs of *Lathria streptophora* (Ibis, 1884, p. 448 pl. 14), the female of which may be described as follows :—

LATHRIA STREPTOPHORA.

♀ mari similis, sed torque cervicali rosaceo nullo, crisso pallide castaneo nec rosaceo differt.

Several pairs of *Pipreola whitelyi* (Ibis, 1884, p. 449) are also in the collection, the male being previously unknown. I take this opportunity of describing the male and figuring specimens of both sexes of this beautiful bird.

PIPREOLA WHITELYI. (Plate XII.)

♂ supra olivaceus, fronte, superciliis et torque cervicali postico aurantiacis; subtus cinereus, plaga magna pectorali læte coccinea utrinque in ochraceum transeunte; crisso rufescente; alis et cauda nigricanti-fuscis, extus saturato ochraceo-brunneo limbatis; rostro corallino-rubro; pedibus pallide rubris. Long. tota 7·0, alæ 3·6, caudæ 2·7, rostri a rictu 0·75, tarsi 0·85.

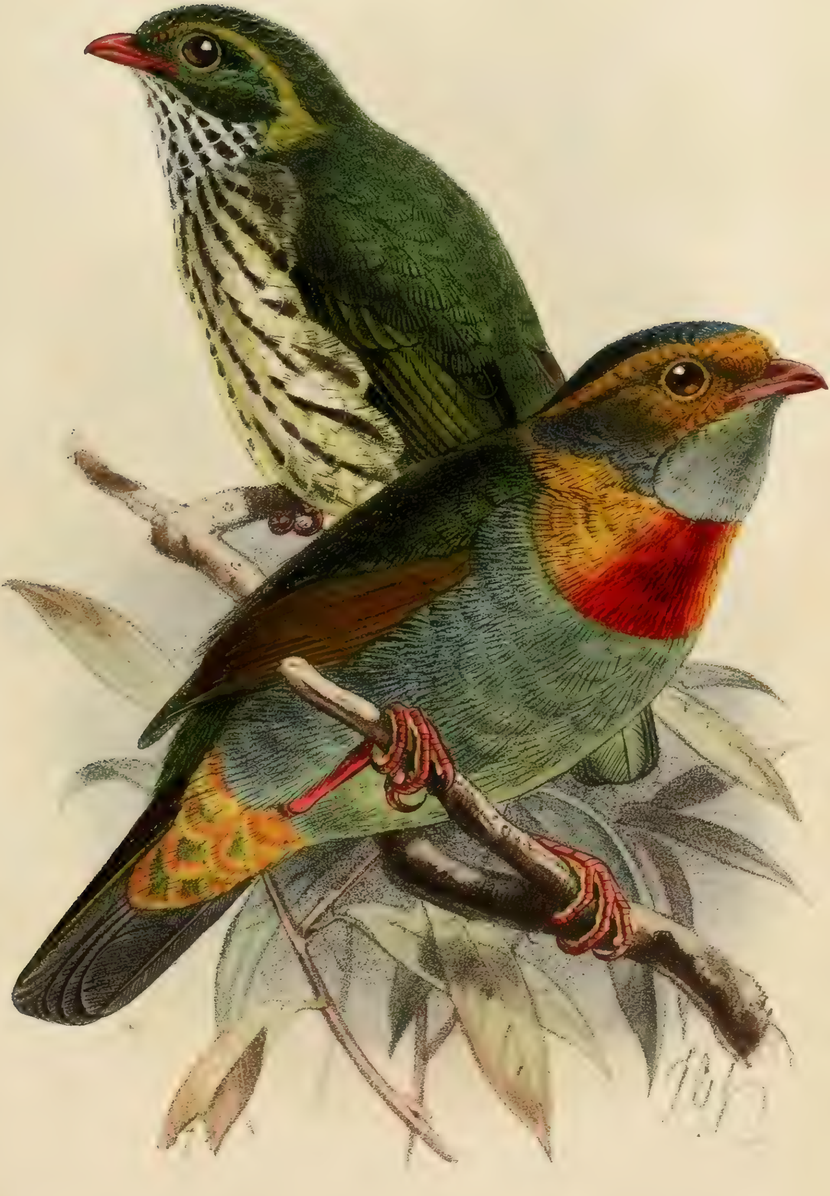
Hab. Roraima (alt. 6000 ft.), Twek-quay Mt. (alt. 3000 ft.).

The male of this fine form turns out to be quite different from any species hitherto described, and can be compared with advantage with none of them. The ashy under plumage, with its distinct scarlet breast-spot, serves to distinguish it at once from all its congeners.

I have also to notice that Mr. Whitely obtained a male of the *Discura* left undetermined in the previous list. It proves to be inseparable from the Brazilian *D. longicaudata*. The specimen was shot on the Carimang River.

It is further necessary to make two corrections in the foregoing list.

PHONIPARA FUMOSA, no. 119, turns out to be identical with *Amaurospiza unicolor* of Cabanis, and our specimens are inseparable from others from Pernambuco (*Forbes*). This species must therefore stand as follows :—



J G Keulemans lith

Hanhart imp

PIPREOLA WHITELYI ♂ et ♀

AMAUROSPIZA UNICOLOR, Cab.

Phonipara fumosa, Lawr. Ann. Lyc. N. Y. x. p. 396; Salv. Ibis, 1885, p. 215.

Phonipara phæoptila, Salv. & Godm. Ibis, 1884, p. 445.

PAROARIA GULARIS, Cab.

Paroaria nigrigenys, Salv. Ibis, 1885, p. 215.

I seem to have wrongly identified Mr. Whitely's specimens with *P. nigrigenys.* They should be referred to *P. gularis.* The true *P. nigrigenys* is a Venezuelan bird, and has a black patch behind the eye and a wholly red throat.

SUMMARY.

Before comparing the birds of Guiana with those of the chief portions of America bearing some relationship to them, it seems necessary to eliminate the migratory species and also the sea-birds from our consideration. Thus we have:—

Total number of species in the Guiana list		625
Less migratory species	29	
sea-birds	7	
	—	36
Remainder for comparison		589

These 589 species are distributed as follows:—

1. AMAZONS VALLEY, including that of the Rio Negro.

Total number of Guiana species found in the Amazons valley		377
Less migratory species	17	
sea-birds	4	
	—	21
		356

or 60½ per cent. of the 589 Guiana species.

To enumerate the birds of Venezuela, Colombia, Ecuador, Peru, and Bolivia which belong more properly to the valleys of the tributaries of the Amazons rather than to the countries to which they are assigned would be a very complicated undertaking and in many cases not at present possible; but I estimate roughly that from 25 to 30 per cent. of the species common to Guiana and the Amazons region do not extend beyond their limits. Amongst these are several peculiar forms which show the close connection subsisting between the two countries. The following genera are thus restricted:—*Xenopipo, Neopipo, Phœnicocercus, Xipholena, Hæmatoderus, Gymnocephalus, Gymnoderus, Rhopoterpe, Topaza, Urogalba, Deroptyus, Nothocrax, Mitua, Opisthocomus* and *Psophia.*

2. Venezuela, including Trinidad.

Total number of Guiana species found in Venezuela		176
Less migratory species	10	
sea-birds	0	
	—	10
		166

or about 27½ per cent. of the 589 Guiana species.

The ornithology of Venezuela has been less systematically worked than many other parts of South America, and for this reason, doubtless, the number of birds of the Guian list found in Venezuela does not exceed 176.

The number of species peculiar to Guiana and Venezuela seems to be quite small, I can only recognize 6 or 7; of these *Chasmorhynchus variegatus* and *Thyrorhina schomburgki* are the most important.

But there is another Venezuelan element that must not be overlooked—that is, the evident relationship of a few of the endemic Guiana species to allied forms of Venezuela to the exclusion of other parts of America. Of these I may mention *Turdus roraimæ, Chlorophonia roraimæ, Calliste whitelyi, Brachygalba lugubris,* and *Aulacorhamphus whitelyanus.*

3. Colombia.

Total number of Guiana species found in Colombia		210
Less migratory species	15	
sea-bird	1	
		16
		194

or about 33 per cent. of the 589 Guiana species.

Amongst the 210 species there is hardly one that indicates any special connection between Guiana and Colombia, as regards their birds, to the exclusion of other neighbouring Andean countries.

4. Ecuador.

Total number of Guiana species found in Ecuador		227
Less migrants	10	
sea-birds	2	
		12
		215

or about 36½ per cent. of the 589 Guiana birds.

As in the case of Colombia, hardly any species can be said to be peculiar to Guiana and Ecuador, but there are a number of the birds included in the latter country which belong more probably to the Amazons valley. This fact has served to unduly raise the percentage of Guiana species found in Ecuador.

5. Peru.

Total number of Guiana species found in Peru		307
Less migrants	21	
sea-birds	7	
		28
		279

or about 47½ per cent. of the 589 Guiana birds.

The ornithology of Peru has been recently examined with great care, and the results given in M. Taczanowski's 'Ornithologie du Pérou.' We thus find 307 of our Guiana birds also mentioned as inhabitants of Peru, and of these 44 are also found in North America. This leaves 263 of more or less restricted range, or about 46½ per cent. of the Guiana total less the widely ranging species and migrants. This number is largely due to the fact that the Peruvian list contains a great number of birds belonging strictly to the Amazons valley.

There seems to be no species peculiar to Peru and Guiana to the exclusion of the Amazons valley or the Andes of Ecuador or Colombia. But some of the endemic Guiana species find their near relations in these Andean countries.

Taking Colombia, Ecuador, and Peru together, with a view to ascertaining what relation there exists between Guiana and their more mountainous parts, we find that the following species are found in both countries, to the exclusion of the lower parts of the Amazons valley:—*Setophaga verticalis*, *Calliste nigricincta*, *Pyranga ardens*, *Zonotrichia pileata*, *Ochthœca setophagoides*, *Contopus ardesiacus*, *Colomba albilineata*.

And the following genera are represented in both districts by allied species:—*Turdus*, *Basileuterus*, *Diglossa*, *Chlorophonia*, *Buarremon*, *Catamenia*, *Piprites*, *Pipreola*, *Heliodoxa*, *Petasophora*, the species of neither country being found in the intermediate lowlands.

6. BOLIVIA.

Total number of Guiana birds found in Bolivia		102
Less migrants	2	
sea-birds	0	
	—	2
		100

or about 17 per cent. of the 589 Guiana birds.

Of the endemic Guiana species it is worthy of note that *Basileuterus roraimæ*, *B. mesoleucus*, *Setophaga castaneo-*

capilla, and *Buarremon personatus* all have their nearest allies in Bolivia, and that *Buteo unicolor* has been recorded from the two countries alone.

7. S.E. and Central Brazil.

Total number of Guiana birds found in S.E. and Central Brazil		214
Less migrants	17	
sea-birds	6	
	—	23
		191

or about 33 per cent. of the 589 Guiana birds.

The following species have only been recorded from Guiana and Brazil:—*Atticora melanoleuca, Sycalis citrina, Platyrhynchus mystaceus, Lochmias nematura, Discura longicauda,* and *Dromococcyx pavoninus.*

Cotile fucata, too, is a Brazilian species, but is also found in the Argentine Republic.

8. Argentine Republic.

Total number of Guiana birds found in the Argentine Republic		25
Less migrants	2	
sea-birds	0	
	—	2
		23

or about 4 per cent. of the 589 Guiana birds.

A few widely-ranging species of the following families make up the above 23 species, viz.:—Mniotiltidæ, Vireonidæ, Hirundinidæ, Tyrannidæ, Dendrocolaptidæ, Cypselidæ, Alcedinidæ, Cuculidæ, Strigidæ, Accipitridæ, Ciconiidæ, Plataliidæ, Anatidæ. *Cotile fucata* (also found in Brazil) is the only species of somewhat restricted range occurring in Guiana and also in the Argentine Republic.

9. Central America and Mexico.

Total number of Guiana birds found in Central America and Mexico		196
Less migrants	27	
sea-birds	6	
		33
		163

or about 27½ per cent. of the 589 Guiana birds.

These 163 Central-American birds are almost all found in the intermediate countries, Venezuela, or Colombia, so that Guiana can hardly be said to have any special relationship to Central America. The only point that occurs to me in this connection is the affinity of the newly described *Eucometis oleaginea* to *E. cassini*, a bird of Southern Central America and the northern part of Colombia, no allied species being found in the intermediate country.

10. West Indies.

Total number of Guiana birds found in the West Indies		52
Less migrants	23	
sea-birds	6	
		29
		23

or about 4 per cent. of the 589 Guiana birds.

As there are no species common to the West Indies and Guiana exclusively, this small percentage of common resident species of wide range shows that the connection between Guiana and the West Indies is very slight indeed.

11. North America.

Total number of Guiana birds found in North America		61
Less migrants	29	
sea-birds	5	
		34
		27

or about 4½ per cent. of the 589 Guiana birds.

These 27 species include wide-ranging species such as *Milvulus tyrannus, Ceryle americana, Chamæpelia passerina,* and Striges (2), Accipitres (6), Herodiones (8), Ciconiidæ (2), Plataliidæ (2), Phœnicopteridæ (1), Rallidæ (2), none of them calling for special comment.

12. SPECIES ENDEMIC IN GUIANA.

Total number 92

or about 16 per cent. of the 589 Guiana species.

These 92 species include birds not only of the mountain ranges but also of the lowlands, and comprise chiefly PASSERES (61); but the following orders are also represented:—MACROCHIRES [Trochilidæ (7), Cypselidæ (1), Caprimulgidæ (2)]; PICI (6); COCCYGES [Galbulidæ (1), Bucconidæ (1), Cuculidæ (1), Rhamphastidæ (3), Capitonidæ (1)]; PSITTACI (5); GERANOMORPHÆ [Psophiidæ (1)]; LIMICOLÆ [Scolopacidæ (1)]; CRYPTURI (1).

The most strikingly peculiar of these endemic species are *Diglossa major, Cyanicterus venustus, Eucometis oleaginea, Buarremon personatus, Agelæus imthurni, Chloropipo uniformis, Pipra suavissima, Lathria streptophora, Pipreola whitelyi, Thamnophilus insignis, Campylopterus hyperythrus, Avocettula recurvirostris, Polymistria pavonina, Neomorphus pucherani, Conurus egregius, Brotogerys panychlora, Chrysotis cœligena,* &c.

One point remains to be noticed, and that is the relationship of the birds of this portion of Guiana to those of Cayenne, the eastern extremity of the whole district. In the vast majority of cases the same species inhabit both portions of Guiana, showing no change whatever; but the facts of *Pipra suavissima* of British Guiana taking the place of *P. serena* of Cayenne, and of the form of *Tachyphonus cristatus* in Cayenne being rather that of the Amazons valley and Venezuela than that of British Guiana, suggest that when the two districts are closely compared other similar differences may be discovered. Unfortunately we have at present nothing like a complete list of Cayenne birds to enable us to make a full comparison.

Then, again, the list of Guianan birds is capable of being considerably extended, so that the subject will have to be revised at some future day.

But it appears, so far, from an examination of these collections, that though Guiana has a certain affinity, as regards its birds, with the Andean countries of Venezuela, Colombia, Ecuador, and Peru, and to a less extent with Central America, Bolivia, and S.E. Brazil, its relationship to the immediately adjoining country, the vast basin of the Amazons river and its tributaries, is much closer. This result is quite in accordance with previous views on this subject.

Further, the connection of Guiana with the West Indies, North America, and the Argentine Republic is very slight, and, as regards the two first-named countries, consists chiefly in the fact that both the West Indies and Guiana are the winter abode of a number of North-American migratory species.

XLIX.—*Notices of Recent Ornithological Publications.*

[Continued from p. 376.]

77. *The American Ornithologists' Union Code and Check-List.*

[The Code of Nomenclature and Check-List of North American Birds, adopted by the American Ornithologists' Union: being the Report of the Committee of the Union on Classification and Nomenclature. New York. 1886. 8vo.]

The motto adopted on the titlepage of this volume—"Zoological Nomenclature is a means, not an end, of Zoological science"—is termed by the Committee a "trite truism," which they raise with regret to the dignity of a "Principle," in order to protest "against every wanton, capricious, arbitrary, or otherwise needless and undesirable change of names which have acquired usage and definite signification in Zoology." The four more Principles enunciated by the Committee being equally unexceptionable, we may pass on to the fifty-two Canons and ten Recommendations. By Canon XIII. it is upheld that "Zoological Nomenclature begins at 1758, the date of the Xth edition of the 'Systema Naturæ' of Linnæus;" so, without wasting time in arguments which must necessarily be barren of results, we will merely express our regret at the adoption of this starting-point instead of the XIIth Edition (1766), considering, as we do, that this proceeding disposes of the last chance of a scientific language in common with our ornithological brethren across the water. Inasmuch as nearly seven pages are devoted to explanation and reasoning as to the propriety of this step, it may possibly occur to some cynical minds that herein our American friends do "protest too much." In Canon XL. it is laid down that "the original orthography of a name is to be rigidly preserved, unless a typographical error is evident," emendations of a purely philological character being rejected. So that because the original describer knew no better than to write *Æstrelata* and E*nicurus*, &c., the erroneous orthography is to be perpetuated, although the new Code itself states that scientific names are to be in Latin or the nearest approach to it! Even more objectionable is the adoption or retention of names given to a section of a genus or other group, as though they had been the names of defined and characterized genera: whereas many of them are merely *nomina nuda*. But enough of this; nor do we intend to say a word about the use of trinomials. Before leaving the first portion of the work, we would, however, remark that it is hardly consistent to select for reprobation *Tetrao mlokosiewiczii*, "named after an obscure forester somewhere in Russia," and not to bracket with it *Synthliborhamphus wumizusume*.

The Check-List itself begins with the Pygopodes, and works upward to the Passeres, the first family being given as Podicipidæ, in opposition to Dr. Elliott Coues, who in his 'Key' renders it, correctly as we think, Podicip*ed*idæ. We protest against the adoption of *Gavia* as the generic name for the Ivory Gull, *Pagophila eburnea*. Boie instituted the genus *Gavia* for the Ivory Gull and the Kittiwake, simply because they both had short tarsi and frequented rocks; but there seems to be no good reason for giving the preference to the Ivory Gull as the *type* of the genus, because of the two it stands the first. Again, it seems a pity to discard the thoroughly well-based and established name *Sterna anglica* for the Gull-billed Tern, in favour of Hasselquist's *S. nilotica.* True, the species in question is found on the Nile, but Hasselquist describes his *S. nilotica* as having "flesh-coloured feet," which the Gull-billed Tern has not; whereas the Little Gull, *Larus minutus,* a bird of about the same size, also found on the Nile, has red legs and feet; and the same may be said of the Common Tern. Such procedure seems inconsistent with Canon XXXVI., "A name resting solely on an inadequate diagnosis is to be rejected;" and with Canon XLV., "Absolute identification is requisite in order to displace a modern current name by an older obscure one." Not much more than a year ago, when vol. ii. of the 'Water-Birds of North America' was published, the old generic name *Mergus* given by Linnæus was good enough, but now it is discarded in favour of *Merganser,* Brisson! It is, however, gratifying to find that to the American Bittern is now assigned the well-known specific designation of *lentiginosus,* instead of that of (*Botaurus*) *mugitans* (Bartram), a *nomen nudum* adopted by Dr. Coues. But (*Anas*) *boschas* and (*Scolopax*) *rusticola* must remain uncorrected, for they were so written, or at least so printed, "in the beginning," *i. e.* 1758.

It is not our wish to pick holes in the execution of the very difficult task of giving, in a few lines, an accurate sketch of the geographical distribution of each of the nearly 800 species enumerated, but a few details may be noticed. We think that *Mniotilta varia* goes beyond "Central America and the West Indies," as far as Colombia and Venezuela; *Turdus fuscescens* goes far south of "the Plains," even unto Panamá and the valley of the Amazons; and *Sialia azurea,* the habitat of which is given as "Southern Arizona and Eastern Mexico," *breeds* in Guatemala. We notice that the authors of the List persist in calling the Cliff-Swallow *Petrochelidon lunifrons* (Say), instead of *P. pyrrhonota* (Vieill.), though how they could argue the point out consistently we cannot think. The demands upon our space preclude further remarks; but while admitting that the publication of such a List demands recognition on its merits, we must regret the drawbacks to which we have already alluded, and others which we have passed over in silence.

78. '*The Auk.*'

['The Auk,' a Quarterly Journal of Ornithology. Vol. III. No. 2, April, No. 3, July, 1886.]

The articles treating of the ornithology of the North-American continent are of the usual interesting character, but some of them need hardly be enumerated in this notice. Mr. C. B. Cory contributes two instalments of his "Birds of the West Indies," with somewhat rough woodcuts of a few of the species. Mr. A. P. Chadbourne describes a new race of the Field-Sparrow from Texas, as *Spizella pusilla arenacea,* var. nov. (p. 248); and at p. 262 a new species of Heron from Florida is named *Ardetta neoxena* by Mr. Cory. Mr. E. T. Seton gives an account of the species found in our Canadian possession, Manitoba, 257 in number; and Mr. W. Brewster concludes his "Ornithological Reconnaissance in western North Carolina," respecting the mountains of which, in winter, Mr. Batchelder contributes his experiences. A batch of new species forms a feature of the July number of our contemporary. Mr. Ridgway opens with *Larus barrovianus,* sp. nov., from Alaska and vicinity, differing from *L. glaucus* in the shape of its bill and coloration of mantle and primaries; *Hæmatopus galapagensis,* sp. n., from the Galapagos; *Amphispiza ferrariperezi, Pipilo submaculatus, P. complexus, Anas diazi, Philortyx personatus,* spp. nn., from various localities in Southern Mexico; *Pyroderus masoni, Aulacorhamphus dimidiatus,* spp. nn., supposed to be from the interior of Venezuela; *Micrathene graysoni,* sp. n., from Socorro Island, Western Mexico; *Pealea,* gen. n., type *Thalassidroma lineata,* Peale; *Geothlypis coryi, G. tanneri, Centurus nyeanus,* and *C. blakei,* spp. nn., from the Bahamas; and, lastly, the new genus *Lawrencia,* type *Empidonax nanus,* Lawr., already mentioned in our present issue (p. 461). Mr. Cory describes three new species:—*Thryothorus guadeloupensis* from Guadeloupe, *Loxi-*

gilla richardsoni from Sta. Lucia, and *L. barbadensis* from Barbadoes. Mr. Brewster's paper on the new Petrel *Æstrelata scalaris* (we should write Œ*strelata*) treats of the question of its distinctness from *Œ. fisheri*, Ridgw., and *Œ. gularis*, Peale.

79. *The Bombay Natural History Society.*

[Journal of the Bombay Natural History Society. Edited by E. H. Aitken and R. A. Sterndale. Vol. I. No. 1, January, No. 2, April, 1886.]

This Society was founded so long ago as 1883, and we are glad to find that it has now developed sufficient vitality to have a mouth-piece. Such a Journal was much wanted in India since the abrupt discontinuance of 'Stray Feathers,' and it is satisfactory to see a goodly list of Members. The Editors are Messrs. E. H. Aitken and R. A. Sterndale, who are also in special charge of the Sections of Mammals and Birds; and the former contributes an interesting ornithological paper to the first number, "On the Mimicry of *Phyllornis jerdoni*," besides "Catalogues of the Birds and Eggs in the Society's Collection." No. 2 opens with a friendly criticism by Mr. H. Littledale, of the 'Handbook to the Birds of the Bombay Presidency,' lately noticed in this Journal (p. 190), by Lieut. H. E. Barnes, who in his turn contributes an article on "Birds'-nesting in Rajpootana." We shall look forward to further interesting papers from our *confrères* and others, for Indian ornithologists should not allow themselves to be forgotten.

80. *Brewster on Bird-Migration.*

[Bird-Migration. By William Brewster. Memoirs of the Nuttall Ornithological Club. No. 1, March, 1886. Cambridge, Mass. 4to.]

An Introduction informs us that although the Nuttall Ornithological Club merged its quarterly bulletin in the 'Auk,' yet seeing that the latter is already overcrowded and unable to accept long papers, the Club has decided to begin a series of Memoirs, to be issued irregularly, as material offers. Naturally the President of the Club takes the initiative, and commences with a very interesting paper, divided into two sections; the former treating of the author's 'Observations on nocturnal Bird-flights at the lighthouse at Point Lepreaux, Bay of Fundy, New Brunswick;' the latter being entitled 'Facts and Theories respecting the general subject of Bird-Migration.' Mr. Brewster's experiences in the lantern of the lighthouse while birds were striking frequently, and at times continuously, are very interesting, his estimate of the proportion borne by the killed and severely wounded to those which escape practically uninjured being highly instructive. Part II. deserves, and has no doubt already received, careful perusal from those who are specially studying the migration of birds. It would be difficult to find a more patient observer than Mr. Brewster, and his statements with regard to North-American species deserve the highest respect, however much some of them may militate against the experiences of some observers on this side of the water. His opinion is, that with most North-American birds the majority of adults either precede or accompany the first flights of young in the autumnal migration, and he has failed to find any proof that the young of a single species precede the old. From this rule he does not even except the North-American Limicolæ. What do our authorities on European migrants say to this? Here is plenty of matter for controversy, and still more for reflection, to which latter we will confine ourselves. To those who believe that the American Spotted Sandpiper visits the British Islands, we recommend Mr. Brewster's remark that it "is conspicuous among Scolopacidæ for its comparatively feeble, restricted powers of flight;" yet there are some ornithologists for whom such unproved visitations present no difficulty, while the well-authenticated narratives of the behaviour of the nestling Cuckoo are classed with stories of ghosts and apparitions.

81. *British Association's Report on Migrations in* 1885.

[Report on the Migration of Birds in the Spring and Autumn of 1885. By Messrs. J. A. Harvie-Brown, J. Cordeaux, R. M. Barrington, A. G. More, and W. Eagle Clarke. Seventh Report. 8vo. Edinburgh: 1886.]

This seventh Report shows a marked improvement upon its predecessors in style and in condensation of material. Mr. Harvie-Brown's remarks upon the main lines of migration in Scotland are very interesting, and to those mentioned by him we may be permitted to add the valley of the Nith, upon the authority of an observant ornithologist, Mr. Robert Service, of Dumfries. As before, a map is prefixed with a numbered index to the stations; but we think that in the body of the Report it would be better if the *names* of the places were given, for practically readers will not refer to the map at every instant to see, for instance, where Stations "IV., X., XIV., and XXVII." may be; they may do so at first, but they will not keep it up for long. The suggestion that a list should be formed of localities where foreign fowls like the various species of *Porphyrio*, Canada Geese, and other water-birds likely to stray, are kept, appears to meet a want, and we recommend it to our readers. Mr. Gätke's diary from Heligoland is of unusual interest this year; but the days on which nothing whatever occurred might have been omitted, to the saving of many a line. We observe that the Recorders for Ireland trust that "the Commissioners of Irish Lights will distribute six additional copies of Morris's 'British Birds' in the present year":—would not the coloured plates suffice without the letterpress?

82. *A. W. Butler on the Birds of Indiana.*

[A List of the Birds observed in Franklin County, Indiana. By Amos W. Butler. Bull. Brookville Soc. Nat. Hist., No. 2, 1886.]

The species mentioned as found in this south-eastern portion of Indiana are 235 in number; and those which breed there are distinguished by an asterisk. This List forms a useful supplement to the accounts already given of the avifauna of the district by Dr. Haymond, Mr. E. R. Quick, and the author.

83. *Giglioli on the Birds of Italy.*

[Avifauna Italica. Elenco delle specie di uccelli stazionarie o di passaggio in Italia, colla loro sinonimia volgare, e con notizie più specialmente intorno alle migrazioni ed alla nidificazione, compilato dal Dottore Enrico Hillyer Giglioli. 8vo. Firenze: 1886.]

This very important work will prove invaluable to any one who is studying the Birds of Europe, containing as it does the most complete and accurate list which has yet appeared of the species found in Italy and the neighbouring islands, inclusive of Malta. Especially useful are the remarks upon geographical distribution and breeding-limits. Amongst the rarities we note *Turdus pallasi, Oreocincla dauma, Nemura cyanura, Sylvia nana, Hypolais olivetorum* and *H. opaca, Accentor montanellus, Chelidon cashmiriensis, Cotile obsoleta, Syrnium uralense, Aquila nipalensis, Bubulcus coromandus, Hydrornia alleni,* and *Ægialitis geoffroyi,* as well as some sea-birds which seldom enter the Mediterranean. By the way, we have recently examined specimens of the Indian Buff-backed Heron (*B. coromandus*) from Lenkoran, on the Caspian. We are glad also to see that Prof. Giglioli has succeeded in unearthing the fast-decaying specimen of *Houbara undulata* which Saunders asserted many years ago to be in the Syracuse Museum, but which has since lain there unobserved, and has even had its very existence doubted. At the end of the volume are lists of residents and migrants, calendars of breeding, &c. We are glad to see that at the suggestion of Prof. Giglioli the Italian Government has established an Ornithological Bureau dependent upon the Board of Agriculture, and at the end of the year a Report will be issued of the results of the observations collected by naturalists and also by keepers of lighthouses and semaphore stations. But let it not be forgotten that, although still without one penny of Government aid, it was a Committee of British ornithologists who inaugurated the movement now so well imitated in America and elsewhere.

84. *Meyer on Birds from Emperor-William's-Land.*

[Notiz über eine Vogelsammlung von Kaiser Wilhelms Land (Nordost-Neu Guinea) und Nachbarschaft von A. B. Meyer. Zeitsch. f. d. ges. Ornithol. 1886, Heft 1.]

Dr. A. B. Meyer treats of the first collection of birds received in Europe from Emperor-William's-Land, as the German portion of New Guinea is now called. This was made by the well-known French traveller Laglaize at Kafu, on the north coast, in 143° 15′ E. long. Two species (*Paradisea finschi*, Meyer, and *Cyclopsittacus edwardsi*, Oust.) had previously been described from the same locality. These, added to the 24 of which examples were in Laglaize's collection, make the total number of species as yet known from Lifu 26, of which the list is here given. Besides these, Salvadori (Atti R. Ac. Sc. Torino, xiii. p. 317) has recorded 16 species of birds obtained on Tarawai Island, off the north coast of New Guinea, which is probably within the limits of the recent German acquisitions. But there is some little uncertainty as to the identification of this little-known island (or islands ?).

85. *'Mittheilungen' of the Ornithological Union of Vienna.*

[Mittheilungen des ornithologischen Vereines in Wien. Section für Vogelkunde. Jahr. 10, Nos. 6-10, 1886.]

These numbers are mostly occupied with local ornithological papers and translations. No. 10 contains an article of wider interest, on the birds of New Zealand, by A. Reischek, of Auckland, in which good original observations on the various Petrels of New Zealand are given.

86–87. *Mojsisovics on Hungarian Birds.*

[Bericht über eine Reise nach Südungarn und Slavonien im Frühjahre 1884. Von Prof. August von Mojsisovics. Mitth. d. naturwissensch. Ver. f. Steiermark, 1884 und 1885.

Biologische und faunistische Beobachtungen über Vögel und Säugethiere Südungarns und Slavoniens in den Jahren 1884 und 1885. Von Prof. August von Mojsisovics. Mitth. d. naturwissensch. Ver. f. Steiermark, 1885.]

In the first paper Prof. Mojsisovics gives us an interesting account of his excursion to Southern Hungary and Sclavonia in May 1884, when he visited some of the great breeding-places of Ardeidæ and other aquatic birds on the Danube and Save. At Nestin, near Illok, on the Danube, an estate of Graf Otto Chotek, was a carefully preserved eyrie of *Aquila imperialis* (sive *heliaca*), situated on an oak tree within sight of the house, from which, as the Professor was subsequently informed, three young birds were successfully reared by their parents two months later. But all the larger birds of this district and their nesting-places seem to have become woefully diminished of late years.

In the second article Prof. Mojsisovics gives a series of systematically arranged notes on the birds met with during the tour described in his former paper, and during another excursion in the same district. Of *Sterna fluviatilis* he speaks at some length and asserts that in this species some examples can only be distinguished from *S. arctica* (sive *macrura*) by the longer tarsus. One hundred and ninety-two species are included in the list. The supposed occurrence of *Hoplopterus spinosus* (see p. 31) was not definitely established.

88. '*Ornis*,' Vol. I, Nos. 2, 3.

[Ornis: Internationale Zeitschrift für die gesammte Ornithologie. Organ des permanenten internationalen ornithologischen Comités, herausgegeben von Dr. R. Blasius und Dr. G. v. Hayek. 1 Jahrg. 2 und 3 Hefte. Wien.]

The conjoined numbers 2 and 3 of our new contemporary 'Ornis' (*anteà*, p. 90) contain articles by E. J. Grabowsky on the habits of the birds of Borneo, and by H. Gätke on the migratory visitors to Heligoland in 1884; as also the lengthy report of the committee on the ornithological observing-stations of Austria and Hungary for 1885, drawn up by Messrs. v. Dalla Torre and v. Tschusi. Herr Gätke's ornithological diary for 1884 will be read with great interest.

89. *Payne-Gallwey on Duck Decoys.*

[The Book of Duck Decoys: their Construction, Management, and History. By Sir Ralph Payne-Gallwey, Bart. 4to. London: Van Voorst, 1886.]

This beautifully printed work, with numerous illustrations and plans for the establishment and working of decoys, falls more within the lines of the sportsman, and even of the antiquarian, than of the pure ornithologist. That it will be read by many of the latter, and deserves to be read by all, there can be no doubt; and if those whose means allow of their keeping up decoys without a view to profit will avail themselves of the practical experiences of one who is both sportsman and ornithologist, considerable advantage may accrue to our favourite branch of science. Even from the present volume, devoid of all pretension in this respect, there is a good deal to be learnt respecting the various Ducks which frequent or are absent from certain localities; and the details of the way in which some species have replaced others is interesting and instructive. For instance, at the Hale Decoy in Lancashire, Mallard predominated from 1801 to 1875; but in the latter year Teal suddenly appeared in large numbers, and the result of this "lead" of fowl has been that numbers of foreign-bred Teal now resort to this favourable locality, replacing the Mallard, whose breeding-haunts in the "moss-lands" of the county are decreasing through drainage. It will be an agreeable surprise to many of our readers to learn that even at the present time, in spite of cultivation, drainage, railways, and trespassers under the Ground Game Act, there are still upwards of forty decoys in working order in England and Ireland, while there are many disused ones which could easily be re-established. We by no means share the gloomy and desponding views expressed by the reviewer of this work in the 'Athenæum'; and even if the majority of decoys can no longer be worked so as to produce an ample livelihood, they can surely be so managed as to afford a good deal of pleasure, with little, if any loss. The sea-board counties of Lincoln, Norfolk, Suffolk, and Essex are, from their position, the most favourable; but inland Nottinghamshire, owing to its large lakes and the winding Trent, is believed to contain at times more wildfowl than any other county of its class; while next to it, perhaps, comes Buckinghamshire, which formerly boasted several decoys. At present only one of the latter is worked; but we understand that a younger member of the Rothschild family takes an active interest in ornithology, and he has now every opportunity for following the example of our worthy President, Lord Lilford, who has recently had a decoy constructed for him near Oundle, in Northamptonshire, by T. G. Skelton, one of the celebrated decoy-making family. We heartily recommend the book, and hope it will be productive of good.

90. *Radde's Fauna and Flora of the South-western Caspian District.*

[Die Fauna und Flora des südwestlichen Caspi-gebietes: wissenschaftliche Beiträge zu den Reisen an der Persisch-Russischen Grenze. Von Dr. Gustav Radde. Leipzig: Brockhaus, 1886. 1 vol. 8vo. 426 pp.]

Dr. Radde has, perhaps wisely, issued in a separate volume the systematic account of the zoological and botanical results of his travels in the district adjoining the south-western portions of the Caspian Sea, which border on the present frontier between Russia and Persia. He had himself prepared the portion relating to the Mammals, Birds, and Fishes of this little-known region, besides the Botany, having obtained the assistance of other well-known savants for the various groups of Arthrozoa and Mollusca. As regards the Birds, this part of the subject has been recently treated of very fully in the author's 'Ornis Caucasica,' published at Cassel in 1884. In the present work we have therefore only a list of the species as yet known to occur in "Talysch," as this district is called, with remarks on their horizontal and vertical distribution. The nomenclature and arrangement of the 'Ornis Caucasica' are adhered to. The species included in the list are 312, and 40 "varieties," *i. e.* subspecies. The 'Ornis Caucasica' gave us 370 species and 66 varieties. We observe that the *Porphyrio* of the Caspian is still called "*veterum*, S. G. Gmelin," although it has been shown that that ancient naturalist never made such a name, and, moreover, that the species in question is the Indian *P. poliocephalus* (*cf.* Ibis, 1885, p. 111).

91. *Reyes on the Birds of Spain and Portugal.*

[Catálogo de las Aves de España, Portugal é Islas Baleares. Por Don

Ventura de los Reyes y Prosper. Anales de la Soc. Esp. de Hist. Nat. tom. xv. 1886. Madrid: 1886.]

This is a very useful compilation, giving a list of 408 species found in or ascribed to the Peninsula, with remarks upon their geographical distribution. The author appears to be well acquainted with the writings of his compatriots, as well as with those of Lord Lilford, Col. Irby, and Howard Saunders, but we fear that he does not understand English perfectly; and he is evidently unacquainted with Saunders's later and fuller Catalogue of the Birds of Southern Spain, *in French,* published in the Bulletin de la Société Zoologique de France, in 1876–77. Unfortunately Dr. Reyes does not draw any critical distinctions between the relative values of the authorities cited by him, one of whom (Vayreda) we consider to be almost valueless, whilst some others, although useful in their time, are now out of date. The treatise is, however, by far the best of its kind that has as yet appeared in the Spanish language, and we are much pleased to see such good work in the Peninsula.

92. *Snelleman on the Birds of Sumatra.*

[Midden Sumatra. Reizen in Onderzoekingen der Sumatra-Expeditie, uitgerust door het aardrijkskundig Genootschap, 1877–79, beschreven door de Leden der Expeditie, onder toezicht van Prof. P. J. Veth. Royal 8vo. Leiden, 1881. Band iv. Natuurlijke Historie. Zorgideerin en Vogels, door Joh. F. Snelleman.]

Mr. Snelleman gives a list of about 95 species of birds of which examples were obtained by Prof. Veth during his expedition into the interior of Sumatra in 1877–79. Three of these species were originally supposed to be new and were described by Schlegel as *Perdix vethi, Arachnothera concolor,* and *Rhipidura vidua.* These are now identified with *Peloperdix rubrirostris,* Salvad., *Arachnothera affinis,* Horsf., var. *modesta,* Eyton, and *Rhipidura atrata,* Salvad., all three being figured; *Treron massica,* Schlegel, is also figured.

93–94. *Sousa on African Birds.*

[Lista das aves colligidas em Africa de 1884 a 1885, pelos Srs. Capello e Ivens. Por José Augusto de Sousa. Jorn. d. Sci. Math., Phys. e Natur. Lisboa, 1886, No. xlii.

Lista das aves colligidas pelo Sr. Serpa Pinto, no Ibo, em 1885. Por José Augusto de Sousa. *Tom. cit.* (Separate copies.)]

The former is a list of some of the species (30 in number) collected by Senhors Capello and Ivens, between 11° 22′ and 15° 38′ S. lat., and 23° 43′ and 30° 21′ E. long., during their well-known journey across the "Dark Continent." Most of the species are South-African, but *Amauresthes fringilloides* appears to have been found for the first time to the north of Zanzibar, and *Musophaga rossæ* beyond the limit of the Province of Angola. From the river Coroca two species are added to the list.

The latter paper contains a list of 23 species sent to the Lisbon Museum by the celebrated explorer Senhor Serpa Pinto, and principally collected between about 12° 25′ S. lat., and 40° 40′ E. long. Among the more interesting are *Smithornis capensis* and *Erythrocercus thomsoni*, Shelley.

95. *Taczanowski on the Birds of Ussuria.*

[Liste des Oiseaux reçus récemment du Sud-ouest du Pays Oussourien. Par L. Taczanowski. Bull. Soc. Zool. France, 1885, pp. 464–478.]

This list contains remarks on 171 species obtained for the Warsaw Museum by MM. Jankowski and Kalinowski; the majority from localities between 43° and 46° N. lat., with a few from Vladivostok, among the latter being an example of the Cinereous Vulture (*Vultur monachus*), new to Eastern Siberia. *Buphus coromandus* is recorded for the first time from North China.

L.—*Letters, Announcements, &c.*

We have received the following letters addressed to the Editors of 'The Ibis:'—

Sirs,—In 'The Ibis,' 1884 (p. 42), Mr. Seebohm wrote, "it seems probable that the name of *Bubo maximus* must be erased from the list of Japan birds." I am happy to be able to avert this erasure, as the Norwich Museum has recently received from Mr. F. Ringer, of Nagasaki, the gift of a typical specimen of *B. maximus* (sive *ignavus*), which was shot on the Goto Islands, a group about 50 miles W.S.W. of Nagasaki, and included in the south-western portion of the Japanese group.

I am &c ,
J. H. Gurney.

Northrepps Hall, Norwich.
June 14, 1886.

Sirs,—At page 367 *supra*, in a report on Dr. Finsch's and my paper on Birds from New Guinea, it was remarked, concerning *Microdynamis parva* of Salvadori, that "the exact locality of the specimen is not stated." I beg leave to remark that in our first paper on Birds from New Guinea (Paradiseidæ), 'Zeitschrift für die gesammte Ornithologie,' 1885, p. 372, it was stated, in a note, that all birds mentioned by us without locality are from the Horseshoe Mountains (see map, *supra*, p. 238). This note has not been reproduced in the translation of our paper (*supra*, p. 240).

Yours &c.,
A. B. Meyer.

Dresden Zoological Museum,
July 13th, 1886.

[This is, no doubt, the case. But in our eyes "locality" is of such importance that it is advisable to state it distinctly, and not to leave it to be found out by reference to a footnote in a former paper, which may be easily overlooked.—Edd.]

Sirs,—I do not think that *Ptilopus melanocephalus* has yet been recorded from Borneo or its adjacent islands. I was ashore for a couple of hours on the island of Bangeuy at the end of last month, when one of my servants shot a male in full plumage. I am unable to say whether this bird is permanently located in Banguey, or whether the one shot was a straggler from Falassan, from which island I think it has been recorded. A day or two previously I obtained a specimen of *Orthorhamphus magnirostris* out of a flock of five at Cape Scinpangmengaio. This species is marked with a query in Salvadori's work. I compared the specimen with Gould's description.

Yours faithfully,
A. EVERETT.

Labuan, Borneo.
July 15, 1886.

P.S.—It is said by natives that Parrots, similar to those found in the Philippines (*Tanygnathus* or *Prioniturus* ?), occur on the Mantanani Islands, a group of coral islets about 18 miles off the N.W. coast of Borneo.

SIRS,—There is so much with which I am disposed to agree in my friend Mr. Seebohm's speculations on the genesis and distribution of species of birds, that although I have for some time felt doubtful whether his views as to the effects of the Glacial epoch are warranted by known palæontological data, I have not hitherto attempted to criticise his conclusions. In previous papers, for instance in those on *Cursorius* and *Scolopax* (*antea*, pp. 121, 141), and also, if my memory is correct, in some earlier writings, the view advocated by Mr. Seebohm has been that the differentiation of the species belonging to a genus, or to a section of a genus, dates from some part of the Glacial epoch. In his last paper on *Himantopus*, however, a very much greater change within the same limited geological time is advocated, and a conclusion is adopted which appears to me very startling and, as I think I shall show, quite untenable. This conclusion (p. 226) is, that "the couple of hundred species and subspecies of birds which compose the family Charadriidæ" are "the variously modified descendants of a species of wader which lived on the shores of the north polar basin some time before the close of the Glacial epoch."

It is manifest from the context, coupled with the remarks on the family Charadriidæ at p. 122, that the author of the passage advocates the view that genera so diverse as *Charadrius, Tringa, Scolopax, Totanus, Himantopus,* and *Numenius* (and, I suppose, *Cursorius* and *Glareola*) have all originated from one ancestral type since the middle of the Pleistocene period. Mr. Seebohm has evidently overlooked the palæontological evidence that exists, and a brief notice of this may be of interest to readers of 'The Ibis.'

It is true that our knowledge of fossil birds is very limited; but still something has been ascertained, and an exhaustive account of the information obtained up to 1871 is given by our eminent foreign member M. Alphonse Milne-Edwards in his 'Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France.' In this work (see 'The Ibis,' 1869, p. 219) species of *Numenius, Tringa,* and *Totanus,* besides a form called *Elorius,* and, above all, a true *Himantopus,* are described from Miocene beds. A bird, referred with doubt to *Numenius* (*N. gypsorum*?), is described from the Eocene; but this, although undoubtedly Charadrian, was a somewhat generalized form intermediate between Curlews and Godwits. In America a genus named *Palæotringa,* probably Charadrian, but of which the affinities are doubtful, has been found in Cretaceous beds. Neglecting the older types, it is manifest that, so far from all the genera of Charadriidæ having originated towards the end of the Glacial epoch, several of the best marked existed in the far more ancient Miocene period.

In case some ornithologists should not be familiar with the relative importance of the geological terms used, I may perhaps be allowed to show how very great the difference is. Omitting all disputed terms, four principal divisions of geological time are usually recognized subsequent to the commencement of the Tertiary era; these are, commencing from the earliest:—Eocene, Miocene, Pliocene, and Pleistocene. But these divisions, judging by the changes that took place in the fauna within the limits of each—by far the best test—were by no means of equal duration. Eocene must have been nearly equal to the Miocene and Pliocene together, whilst each of the latter greatly exceeded the Pleistocene.

The Glacial epoch was comprised in the Pleistocene, with which it may be regarded as practically equivalent.

Most of the birds' bones which have been found in cave-breccias and other Pleistocene deposits appear to have been those of species that are still living at the present day; and there is no reason to believe that changes in birds have taken place more rapidly than in Mammalia, the fossil remains of which are far more abundant. Indeed the evidence points rather the other way. Now the majority of the Pleistocene Mammalia are living species and, so far as it is practicable to judge, nearly all—perhaps all truly generic forms, such as are adopted amongst birds by Mr. Seebohm—date from the Pliocene at least, whilst many are older.

In cases such as those of *Scolopax* and *Cursorius,* where the differentiation suggested only extends to a few allied species, there is a greater possibility that Mr. Seebohm may be correct. Indeed some years ago I suggested a similar origin—the intervention of an ice-covered continent in the Glacial epoch—to account for the separation of certain allied species of migratory birds in Eastern and Western Asia; but the hypothesis should be used with caution. I doubt whether, in any case, all the species of any considerable genus have been differentiated since the commencement of the Pleistocene.

Mr. Seebohm's geological views are also, I think, in several respects open to exception. It is possible that there may have been half a dozen alternations of glacial and interglacial phases in the Pleistocene epoch (p. 226), but it is at least equally probable there were none; and certainly the evidence existing for more than one interglacial phase is quite insufficient to justify the founding of arguments upon it. Then what reason is there for supposing that at one portion of the Glacial epoch a glacier (ice-sheet?) stretched "from the North Pole down the mountains of Greenland" (p. 226), and that in a subsequent phase of that epoch a different glacier extended "across the North Pole from the Rocky Mountains either to Novaya Zemlya or to the mountains of Eastern Siberia"? (p. 227). Unless a change in the distribution of land and water took place in the interim, the ice of one cold cycle would probably occupy the same area as did that of the preceding cycle. Without some evidence of the area occupied by ice-sheets at different times, it is scarcely scientific to suggest hypothetical glaciers in order to account for hypothetical specific differentiations. Moreover the area of the ice-sheets in North America and Western Europe is fairly well ascertained, and does not, so far as I can see, support Mr. Seebohm's hypothesis. Certainly he is mistaken in the inference he draws at p. 228, where he says, "The shores of the Pacific are so much more mountainous than those of the Atlantic, that the ice of the Glacial periods must have extended much further south on the former than it did on the shore of the Atlantic." In the Eastern hemisphere the statement that the Pacific coast is much more mountainous than the Atlantic is open to question, whilst in America it has been ascertained that despite the mountains in the neighbourhood of the Pacific the ice did not extend so far south along that shore as it did on the Atlantic. This necessarily follows from the arrangement of the isothermal lines, which show the west coast of each continent to be the warmer, and which must have shown similar differences in the ice-age, as they are due to the earth's rotation.

These are, however, matters of minor importance. Upon the main question, I think that Mr. Seebohm over-estimates the effects of the Glacial epoch, and that the origin of existing genera and, to a great extent, of existing species of birds is of higher antiquity. On the other hand, I heartily agree with Mr. Seebohm in believing that the laws of geographical distribution are not the same for the whole animal kingdom; and in confirmation of his argument on this head I may mention that, as I pointed out two years ago, in an address to the Geological Section of the British Association, there are some important differences between land Mollusca and Vertebrata in this respect. I believe, too, that the distribution of Plants differs materially from that of Vertebrate animals.

W. T. Blanford.

September 15, 1886.

Report on the British Museum for 1885.—The Parliamentary Report of the British Museum for 1885 contains the following passages on ornithological subjects :—

"The 'Hume' Collection of birds of the British Asian Empire consists of 63,000 bird-skins, 18,500 eggs, and 500 nests, besides 371 skins of Mammalia.

"This collection has been presented by Allan O. Hume, Esq., C.B., and is, without comparison, the most extensive, complete, and important that has ever been formed of the birds of the Indian region. The aim of the donor was to obtain specimens from, and to acquire a perfect knowledge of, the avifauna of every part of British Asia. For this purpose he organized a system under which numerous local observers and collectors worked for and with him. He fitted out expeditions, with a staff of collectors and taxidermists, into Scinde, Coorg, Manipur, the Malayan Peninsula, Tennasserim, and the Andaman and Nicobar Islands; he also acquired, either by purchase or presentation, collections formed by other well-known Indian ornithologists, as the Mandelli collection from Sikim and Tiber, Brook's Northwestern and Central Indian birds, Adams's Lambhur birds, Bingham's collections from Delhi and Tenasserim, and Scully's collection from Turkestan.

"The value of this collection, therefore, should not be measured merely by the number of specimens which it contains, but by the judgment which determined their selection, the history attached to many of them, and the completeness of the several series. Assuming that the collection contains 2000 species, each would be represented on an average by about 30 specimens, and that number is, in the majority of cases, necessary to illustrate the geographical distribution or variation of the species according to age, season, or locality.

"A series of 5331 specimens of American birds, presented by F. D. Godman, Esq., F.R.S., and O. Salvin, Esq., F.R.S. —This is the first instalment of a donation which, when completed, will, with regard to its scientific value, be perhaps not surpassed even by the donation reported above. The donors have been engaged in the formation of a collection of the birds of Tropical America for many years, and are at present describing its contents in their magnificent work entitled 'Biologia Centrali-Americana.' In order to render their collection, as soon as possible, available for general study, and more especially for the purpose of the 'Catalogue of Birds,' which the Trustees are publishing at present, they have offered to transfer to the British Museum such parts as have been completed in their work. All the specimens are in the most perfect condition and accurately labelled, so that their incorporation into the general collection entails no more work than the mechanical labour of placing them in the cabinets.

"Besides the 'Hume' collection with 82,000 skins, nests, and eggs, and besides 5331 specimens from the 'Salvin and Godman' collection, and 2281 from the 'Sclater' collection, the additions amount to 2149, of which the most important are the following :—

"Pairs of the parent birds of the Ring-Ouzel, Shoveller, Teal, Pochard, and Tufted Duck, with their nests and eggs, from Norfolk ; presented by Lord Walsingham.

"Pairs of the parent birds of the Common Gull, Herring-Gull, Lesser Black-backed Gull, Arctic Tern (five pairs), and Richardson's Skua (two pairs, with their nests and eggs, or young, from the Island of Moussa, Shetland) ; presented by Lieut. G. H. Bruce, R.N., and E. M. Nelson, Esq.

"Nest and young, with parent bird of the Common Wren ; presented by Colonel Irby.

"A pair of Teal, with nest and young, from Tring ; presented by the Hon. Walter Rothschild.

"Nine hundred and thirty-six specimens from various localities ; presented by R. Bowdler Sharpe, Esq.

"Thirty Finches from Northern France and the Vosges Mountains ; presented by E. Hargitt, Esq.

"Twenty specimens of Finches and Starlings from Norway ; presented by the Christiania Museum.

"Twelve specimens of rare Buntings from Siberia and Japan ; presented by Henry Seebohm, Esq.

"Three specimens of Steller's Sea-eagle (*Haliaetus pelagicus*), from Kamtchatka; presented by Henry Seebohm, Esq.

"A collection of 198 specimens from Fao, in the Persian Gulf; presented by W. D. Cumming, Esq.

"Twenty-four specimens from the Island of Palawan, collected by W. E. Lempriere, containing 13 species new to the collection, with three new species; purchased.

"Two specimens of *Falco babylonicus* and one of *F. peregrinus* from Rajputana; presented by Scrope Doig, Esq.

"Sixty-six skins from Muscat, including the types of *Merops muscatensis* and *Bubo milesi*; presented by Colonel Miles.

"Twenty-two birds from Aden; presented by Major Yerbury, R.A.

"Eight hundred and fifty-three specimens from Buenos Ayres and Patagonia, collected by the late Mr. Henry Durnford, containing the types of *Cyclorhis altirostris* and *Porzana spiloptera*; purchased.

'A specimen of the rare Swainson's Warbler (*Helonæa swainsoni*) from Charleston; presented by Dr. Elliott Coues.

"An example of the rare Pygmy Owl (*Micrathene whitneyi*) from Arizona; presented by H. K. Coale, Esq.

"Two specimens of the Tooth-billed Bower-bird (*Scenopeus dentirostris*), and a pair of *Cracticus rufescens* from Queensland; presented by T. H. B. Bowyer, Esq."

Sale of the Jardine Ornithological Collection.—The dispersal, on the 17th of June last, of this historical collection by Messrs. Puttick and Simpson, the well-known auctioneers of literary property, is an event which can hardly be passed without notice. It is true that nearly twelve years have been allowed to elapse since the death of Sir William Jardine, in 1874, and the intimate knowledge of the treasures contained in his collection was confined to an annually narrowing circle; but ornithologists were not wanting who remembered the numerous species described by him from time to time, and who knew full well that no such opportunity had hitherto presented itself for the acquisition of the actual types or of typical specimens. It had been hoped that this entire collection, consisting of upwards of 8000 specimens (the British portion having gone to Edinburgh), would have been acquired by the British Museum of Natural History; but we believe that a very reasonable offer was refused, and one which eventually proved to be in excess of the total obtained at the sale. Either the catalogues were sparingly circulated or else they were sent to the wrong people: the result was a poor attendance and, as a rule, ridiculously low prices. If, in addition to the sale catalogue, the printed copies which the auctioneers held of Sir William's *detailed* catalogue, consisting of 208 pages, had been circulated or even sold for a small sum, there can be little doubt that the amount realized would have been far greater. We were glad to see that both the Cambridge University and the British Museum secured some valuable lots; and the buyer for the latter obtained, in a lot of unspecified mounted birds, nothing less than the type of Bulwer's Petrel, for a few shillings. If this specimen had been catalogued, or if its existence had been known, it would probably have fetched many pounds. A sadder sight than the throwing away of this fine collection among dealers and plumassiers has seldom been witnessed: but through no fault of the auctioneers, who did their best with this, to them, novel description of property.

New Work by Professor R. Ridgway.—We are glad to hear that Messrs. J. B. Lippincott & Co. have in the press a 'Manual of North-American Birds' by our valued Foreign Member Prof. Ridgway, of Washington. The work is to contain 425 illustrations, suitably executed, and, as regards geographical limits, classification, and nomenclature, it will be in conformity with the Code of the American Ornithologists' Union.

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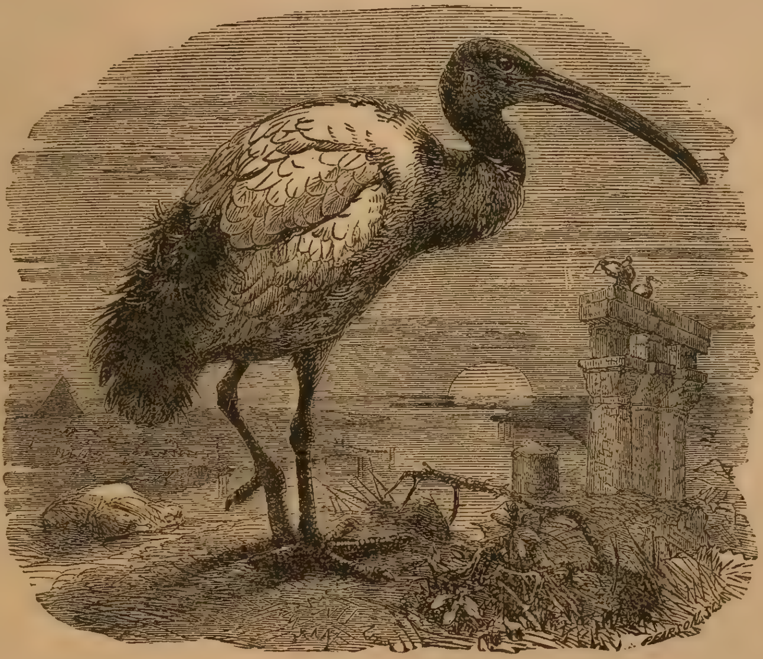

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4. The Canadian Record of Science. (Vol. i. nos. 2–4.)

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6. Dalgleish. List of the Birds of Culross and Tulliallan. (Appendix to Beveridge's 'Culross and Tulliallan,' 1885.)

7. Lawrence. Descriptions of new Species of Birds of the Family Columbidæ. (The Auk, vol. ii. no. 4.)

8. Lawrence. Description of a new Species of Bird of the Genus *Engyptila*, with Notes on two Yucatan Birds. (Ann. N. Y. Acad. Sci. iv. no. 8.)

9. Menzbier. Œuvres Posthumes de M. le Dr. N. A. Sewertzow. (Nouv. Mém. Soc. Imp. d. Nat. Moscou, xv. 1885.)

10. Mittheilungen des ornithologischen Vereines in Wien. (Section für Vogelkunde, &c. 1885. Jahr. 9, Nos. 20–28.)

11. Newton. Memoir of the late John Scales. (Trans. Norfolk and Norwich Nat. Soc. vol. iv.)

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16. BLASIUS. Die Raubvögel von Cochabamba. (Mitth. d. ornithol. Ver. 1884, no. 9.)

17. BLASIUS. Osteologische Studien (Messungs-Methoden an Vogel-Skeletten). (J. f. O. 1885, p. 409.)

18. BLASIUS. Ueber einige Vögel von Cochabamba in Bolivia. (J. f. O. 1885, p. 416.)

19. BLASIUS. Beiträge zur Kenntniss der Vogelfauna von Celebes.—I. (Zeitsch. f. d. ges. Ornith. 1885, Heft iii.)

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24. Jahresbericht (1883) des Ausschusses für Beobachtungsstationen der Vögel Deutschlands. (J. f. O. 1885, p. 225.)

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27. Mittheilungen des ornithologischen Vereines in Wien. (Section für Vogelkunde, &c. 1885, Jahr. 9, Nos. 29–32; 1886, Jahr. 10, Nos. 1–5.)

28. Random Notes on Natural History. Vol. iii. no. 2.

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31. VORDERMAN. Bijdrage tot de Kennis der Avifauna van den Berg Salak (West-Java). (Natuurk. Tijdsch. v. Nederl. Indië, Dl. xlv. Afl. 3.)

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41. Meyer. Notiz über eine Vogelsammlung von Kaiser Wilhelms Land. (Zeitschr. f. d. ges. Ornith. 1886, Heft 1.)

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48. Taczanowski. Liste des Oiseaux reçus récemment du Sud-ouest du Pays Oussourien. (Bull. Soc. Zool. France, t. x. 1885.)

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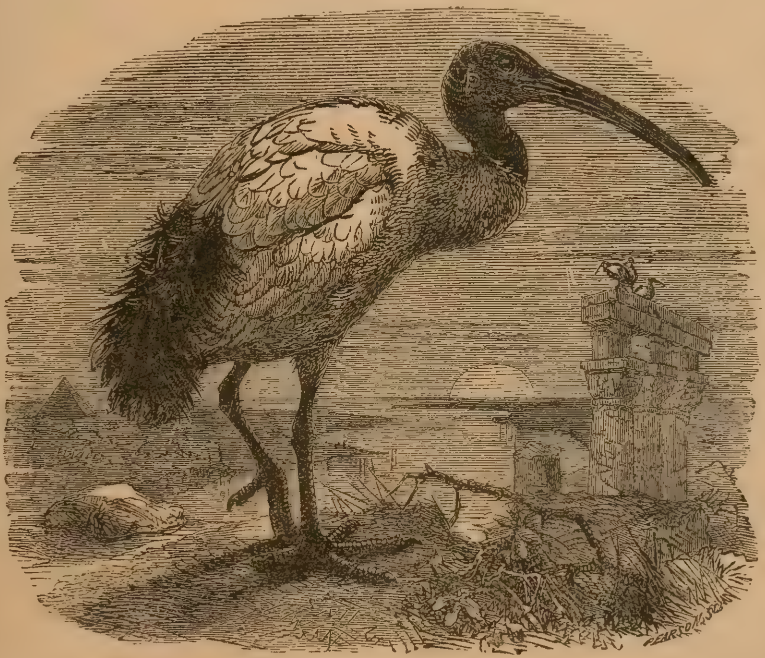

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51. Berlepsch. Kritische Bemerkungen zur Colibri-Literatur. (Festschr. d. Ver. f. Naturk. zu Cassel, 1886.)

52. Blasius. Beiträge zur Kenntniss der Vogelfauna von Celebes. II. (Zeitschr. f. d. ges. Ornith. 1886, p. 81.)

53. Bulletin of the California Academy of Sciences. (No. 4. 8vo. 1886.)

54. Büttikofer. On a Collection of Birds from the Tenimber Islands. (Notes from the Leyden Mus. viii. p. 58.)

55. Büttikofer. On a new Species of *Pericrocotus* from Sumbawa. (Notes from the Leyden Mus. viii. p. 155.)

56. Fischer und Pelzeln. Vögel und Säugethiere von Jan Mayen. (4to. Wien, 1886.)

57. Gurney and Southwell. Fauna and Flora of Norfolk.—Part . Birds. Sect. 1. (Trans. Norfolk and Norwich Nat. Soc. iv. p. 259.)

58. Huet. Note sur les naissances, dons et acquisitions de la Ménagerie du Muséum d'Histoire Naturelle pendant des mois de mai–décembre 1885, et de janvier–avril 1886. (Bull. Soc. Nat. d'Acclimat. France, 1886.)

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60. Mittheilungen des ornithologischen Vereines in Wien. (Section für Vogelkunde, Jahrg. 10, Nos. 11–16, 1886.)

61. Nathusius. Ueber die Lage des Vogel-Eies im Uterus. (Zool. Anz. 1885, p. 413.)

62. Nathusius. Besteht eine ausnahmslose Regel über die Lage der Pole des Vogel-Eies im Uterus im Verhältniss zur Cloakenmündung? (Zool. Anz. 1885, p. 415.)

63. Nathusius. Ueber das fossile Ei von *Struthiolithus chersonensis,* Brandt. (Zool. Anz. 1886, p. 47.)

64. Oustalet. Note sur un Perroquet et sur un Pigeon Goura de la côte septentrionale de la Nouvelle-Guinée. (Bibliothèque de l'Ecole des hautes études, tome xxxi. art. 2.)

65. Oustalet. Catalogue des Oiseaux rapportés par M. G. Révoil de son deuxième voyage aux Pays des Çomalis. (Bibliothèque de l'Ecole des hautes études, tome xxxi. art. 10.)

66. Oustalet. Description de quelques oiseaux nouveaux de la Chine et du Thibet. (Le Naturaliste, 1886.)

67. Pelzeln und Kohl. Ueber eine Sendung von Säugethieren und Vögeln aus Ceylon. (Verhandl. k. k. zool.-bot. Gesellsch. Wien, 1885.)

68. Shufeldt. Osteology of *Conurus carolinensis.* (Journ. Anat. & Phys. vol. xx. p. 407.)

69. Smart. Birds on the British List. (8vo. 1886.)

70. Taczanowski. Ornithologie du Pérou. Tables. (8vo. 1886.)

71. Vorderman. Bijdrage tot de Kennis van de Avifauna der Preanger Regentschappen Langs de Wijnkoopersbaai (West-Java). (Natuurk. Tijdschr. v. Nederl. Indie, Dl. xlvi. Afl. 1.)

72. Wells. A List of the Birds of Grenada, West Indies. (8vo. 1886.)

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